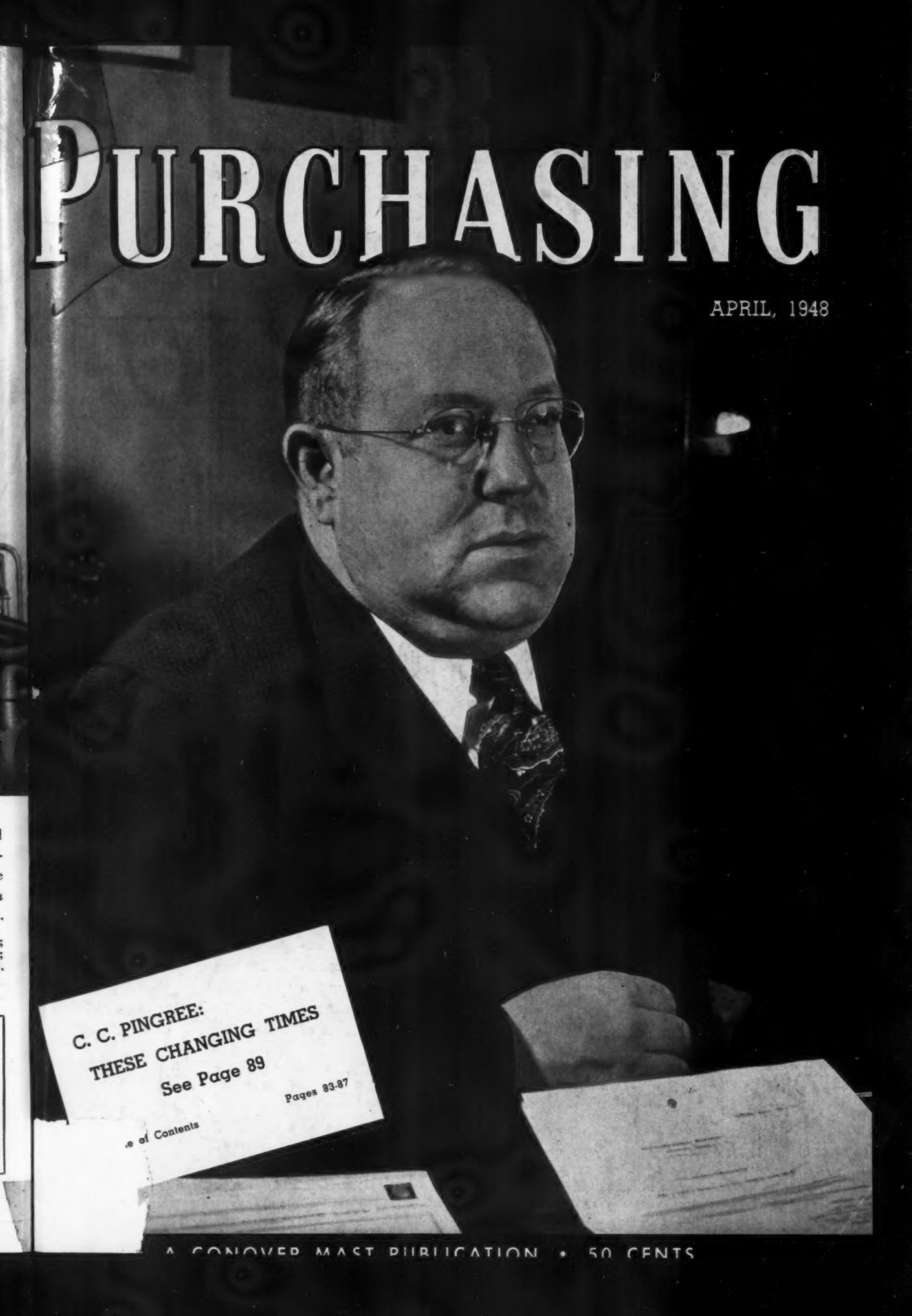
PURCHASING

APRIL, 1948



C. C. PINGREE:
THESE CHANGING TIMES
See Page 89

Pages 83-87

e of Contents

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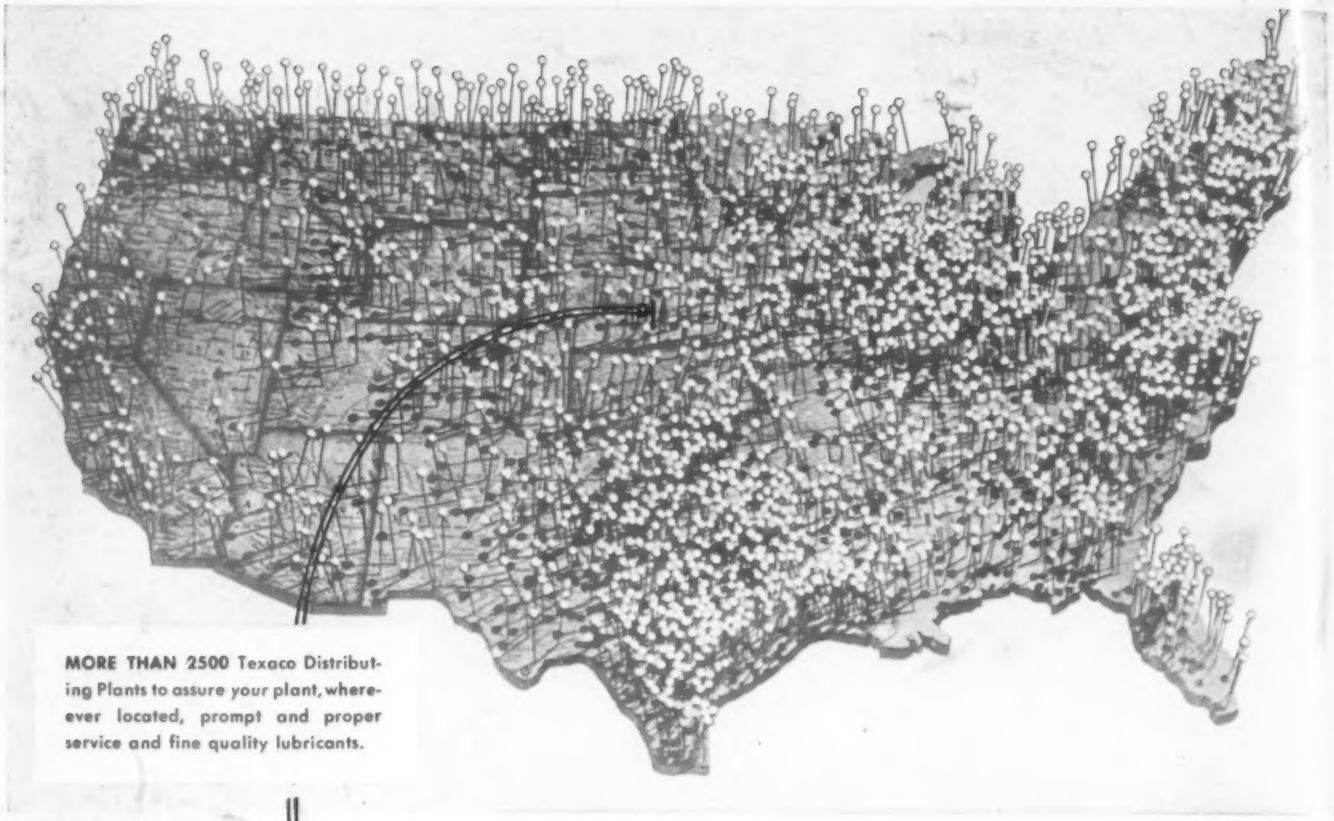

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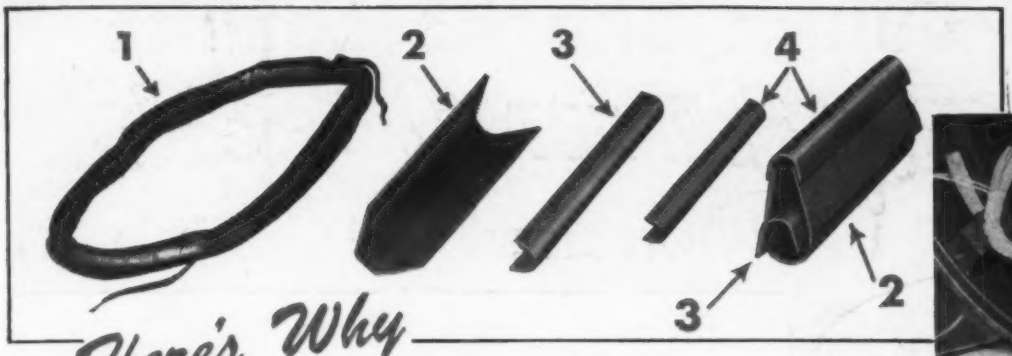

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No. 2 — A combination of heavy fish paper and varnished cloth with high dielectric strength forms the slot insulation. This insulates the coil from the stator iron.

No. 3 — Fish paper formed to the correct contour and size insulates the coils from each other in the slot.

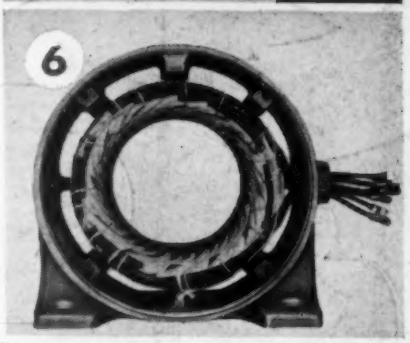
No. 4 — The "U" shaped fiber wedge draws the edges of the slot insulation together, closing the insulation cell, holding the coils in the stator iron — and wedging the coils rigidly in the slot.

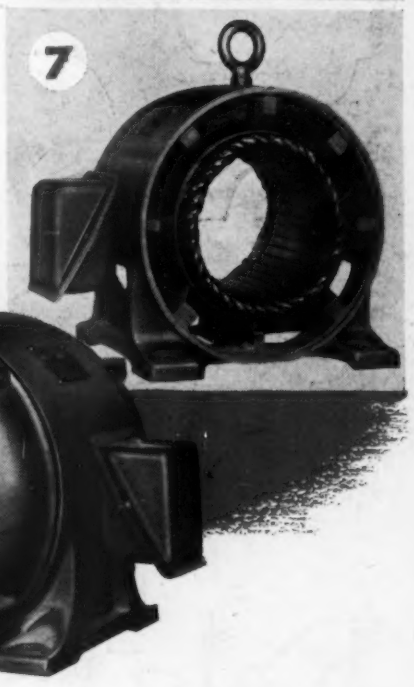
No. 5 — Shows how the coils are fitted into each slot together with the three pieces of insulation.

No. 6 — Shows the stator after the winding job has been completed, but before it has been dipped into the insulating compound. Notice the neat compact job of inserting and connecting the coils and lead wires.

The stator is then dehydrated in an oven, and immediately thereafter dipped into Century's special insulating compound and then baked. After each stator is thoroughly baked, repeating this process as necessary, it is given a final coat of heavy air drying varnish for mechanical protection.

No. 7 — The final result is a rigid mass that is thoroughly insulated — highly resistant to moisture and abrasion. The individual wires are held together and sealed to the stator core, eliminating chafing between wires and between coils and stator iron.





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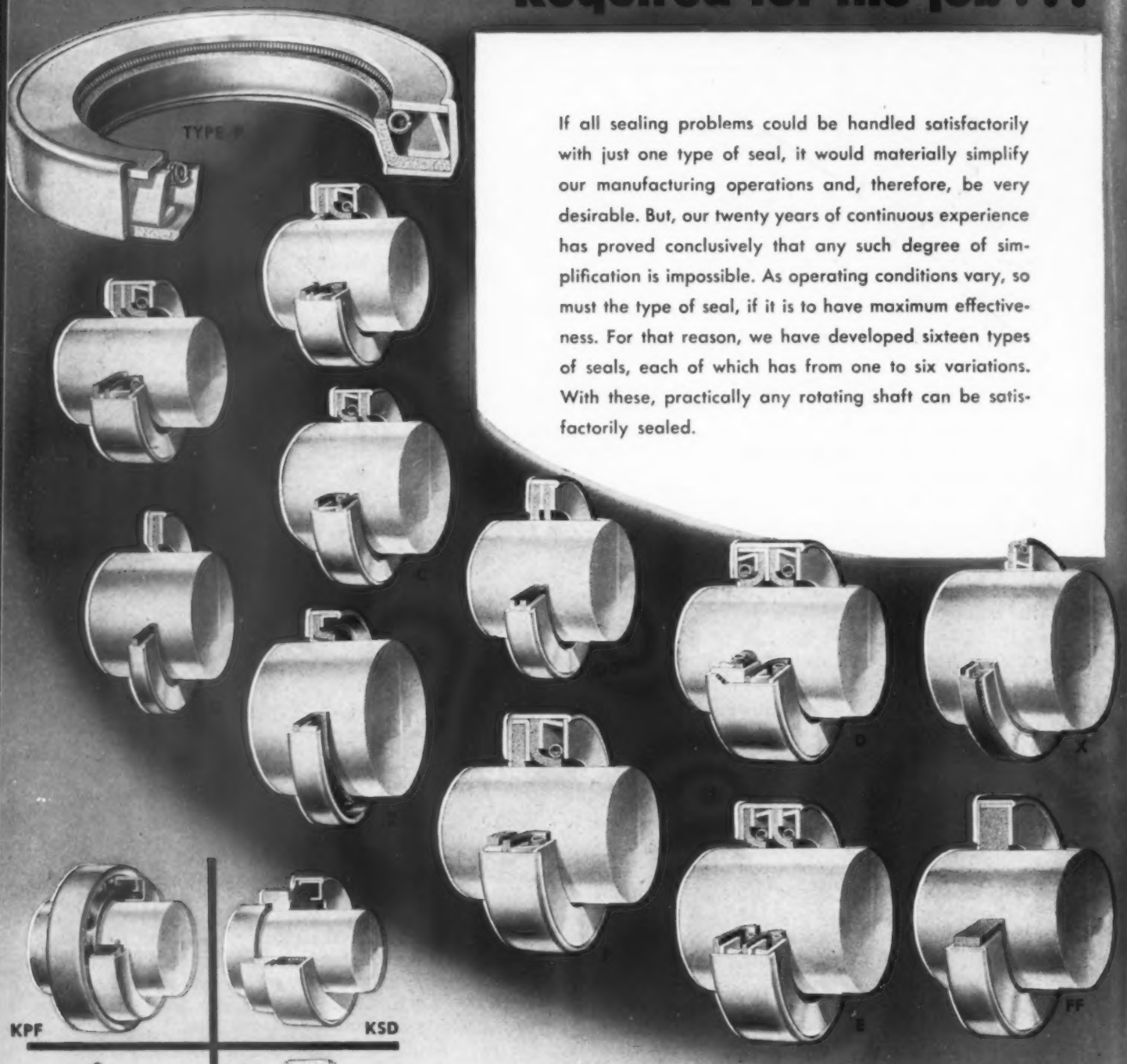

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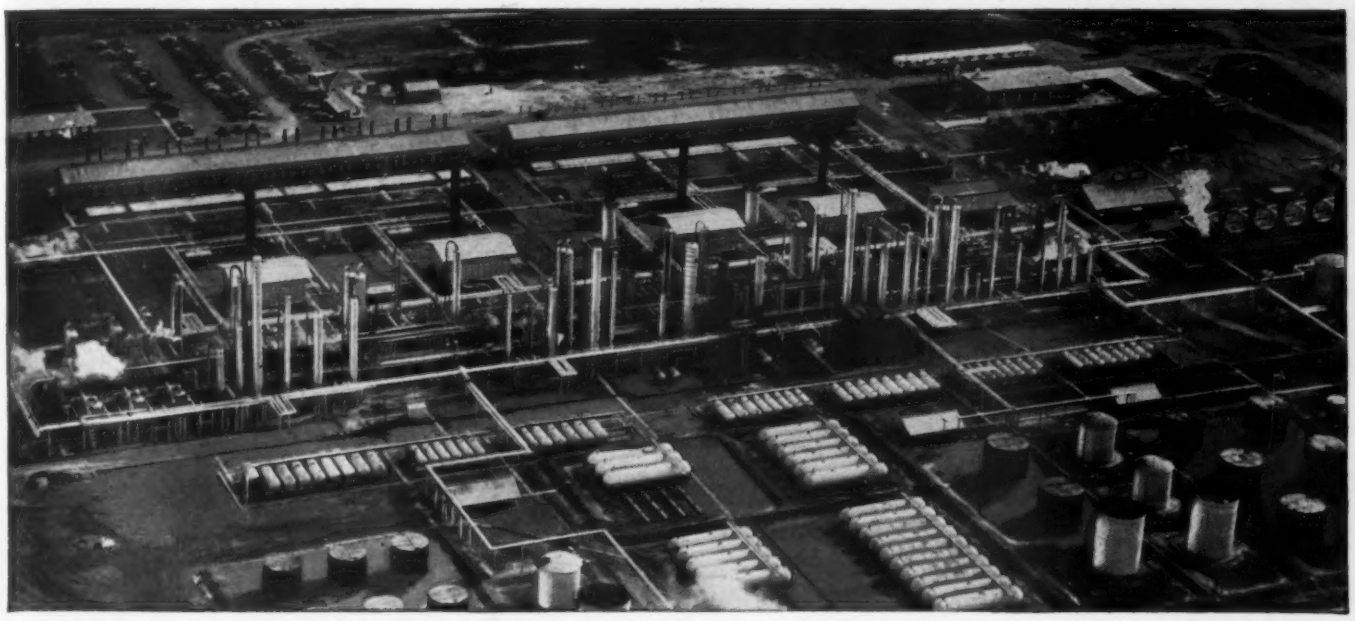

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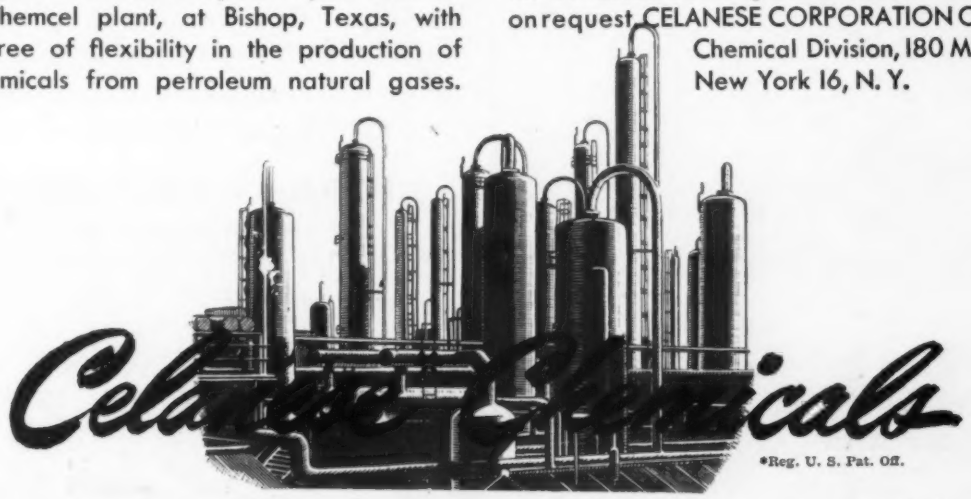

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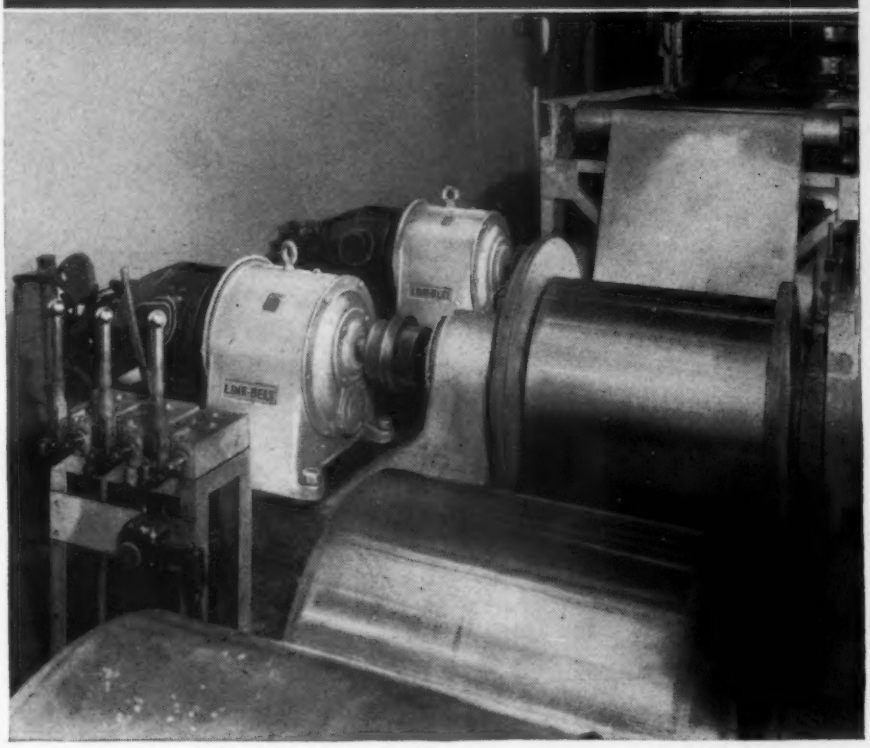

Because Link-Belt manufactures four types of speed reducers, you are sure to obtain the type and size which will serve you most satisfactorily when you come to Link-Belt.

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Now you can take advantage of a molded plastic that gives you the strength and toughness of steel—at far less weight. *Dilecto* gives you many extra advantages that can help you improve product design, performance, and appearance. It offers you positive moisture and heat resistance. *Dilecto* is a non-metallic and non-conductor that absorbs shock and cushions vibration like rubber—yet wears like steel! And it's readily workable, too. Like wood, it can be drilled, tapped, shaped, milled, and threaded—in little time, and with little effort.

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Worn surfaces have been built up with Ni-Rod.

Cam, after machining. Ni-Rod deposit now forms the wearing surfaces.

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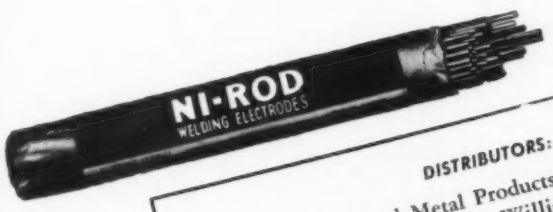

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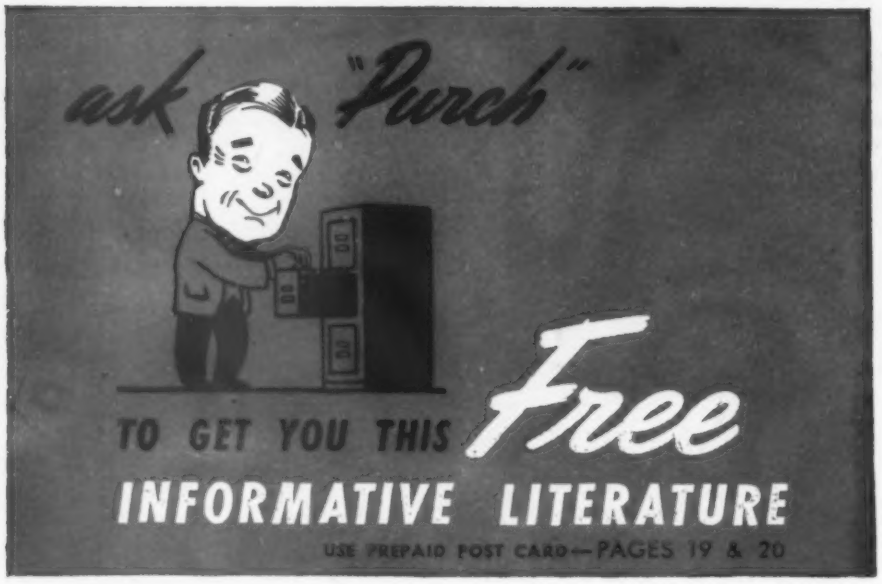

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☐ **2. COLOR IN OFFICE SYSTEMS**—"Color Systems in Business" is title of guide containing 286 ideas on the use of colored pencils in business—ways of increasing efficiency, and getting work done faster, better, and more economically. Eberhard Faber Pencil Co.

☐ **3. COUPLINGS**—New "Waldron Flexible Coupling" catalog tells about the new Series A Gear Type Coupling, along with full details and rating tables on standard, heavy duty, mill motor, marine, floating, shaft, oil collector and other types. John Waldron Corporation.

☐ **4. ELECTRIC TERMINALS**—Catalog Section 52 gives complete details about Shur-Plug solderless replacement terminals for "snap-in" disconnect connections, for instrument panel wiring, relays, lights, etc. on cars, trucks and buses, automatic controls on washers, radios, etc., and for relays, controls, lights, etc. on tractors and other industrial material handling equipment. Aircraft-Marine Products Inc.

☐ **5. TRUCK CRANE**—Circular describes the Hydro-Lift truck crane for use on truck or ground; fast lifting, 2000 lbs. capacity, automatic cable adjustment. It is easy to operate. Overall width 12"; length of boom 45".

☐ **6. AIR COOLER**—The Heliflow air aftercooler is subject of Bulletin MP-117 issued by Graham Manufacturing Co., Inc. Maker says it occupies little space, provides phenomenal high rates of heat transfer, and is inexpensive to maintain. No packed head or stuffing boxes are employed in its construction. It is leakproof.

☐ **7. CONTRACT WORK**—Bulletin describes time and head-ache saving service offered to Purchasing Agents by National Industrial Chamber, Inc., national clearing house for contract manufacturing in metals, wood, plastics and related service. Chamber lists hundreds of diversified manufacurers and their facilities. There is no service charge. P. A.'s negotiate direct with manufacturer best suited for job.

☐ **8. INDUSTRIAL TIRES**—Industrial tires, pneumatics and solids, and General Tire wide base rims are the subject of bulletin issued by Industrial Tire Divn., The General Tire & Rubber Co. about moving materials and mobile equipment faster, easier and at lower cost. Bulletin tells how to select the right tire and wheel for the job.

☐ **9. FLEXIBLE SHAFTS**—Bulletin 4501 gives basic information and data on S. S. White Flexible Shafts for remote control and power drives, and also gives factors to be considered in selecting shafts for either use. Industrial Division, S. S. White Dental Co.

☐ **10. STICKERS**—If you are buying labels and stickers you should have a copy of the Fentan Label Company's new catalog on distinctly different products made by the FentOnamel process. Its 80 pages show hundreds of labels and stickers in full color —green, red, blue, gold and silver, and a fine assortment of multi-color labels.

☐ **11. HEADS**—Stock list covers Lukens flanged and dished heads, both standard and ASME, and gives sizes and gages of carbon steel heads regularly stocked. Check No. 11 for copy of "Heads in a Hurry". Lukens Steel Co.

☐ **12. FOLDING MACHINE PASTE**—New technical Service Bulletin issued by Paisley Products, Inc., describes improved folding machine pastes for paste binding of small pamphlets, magazines and similar publications. It is claimed that use of these pastes eliminates saddle stitching and separate trimming operations, as pamphlets of 8, 12 or 16 pages can be folded, pasted and trimmed in one operation.

ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE
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☐ **13. MECHANICAL RUBBER GOODS**—Sixth edition of "Manhattan Rubber Products for Industry", a condensed catalog of mechanical rubber goods, is announced by the Manhattan Rubber Division of Raybestos-Manhattan, Inc. Particular emphasis is given transmission and conveyor belting, V-belts, hose, molded products, rubber roll coverings, tank linings, and abrasive wheels.

☐ **14. ALUMINUM PAINT**—How and Where to use Aluminum paints for brighter and cooler interiors, how to get best results on wet walls, wood, metal, brick, concrete, heated surfaced, equipment and products, is the subject of new 24-page manual just published by Aluminum Industries, Inc.

☐ **15. INSTRUMENTS & CONTROLS**—Sixty-six page illustrated catalog is characterized as handbook because of its comprehensive coverage of standard makes of instruments and controls. Page is given over to the purchase and use of instruments. Book covers various makes of pyrometers, controllers, thermocouples, meters, transformers, rectifiers, rheostats, relays, etc. Electro-Tech Co.

☐ **16. FEEDER VOLTAGE REGULATOR**—Operating and construction features of transformer-type DFR ⅝ percent step feeder voltage regulator are described in a new 24-page illustrated bulletin released by the Allis-Chalmers Company. The DFR regulators are built in 2,400, 4,800 and 6,900 volt, single-phase ratings in standard sizes. Bulletin is No. 01B6065A.

☐ **17. FORK TRUCKS, TRACTORS**—Colorful 40-page catalog issued by Tructractor Divn. of Clark Equipment Co. presents its full line of machines and special handling equipments. Featured are the Clark "Pul-Pac" which handles unit loads based on sheets of corrugated paper, fiber board or similar material; and the "Hi-Lo-Stack" which combines 130" lift, 83-inch overall height and 62-inch "free" lift.

☐ **18. ALUMINUM Bronze for Cold Heading**—Bulletin 88 describes Ampcoloy 49, a new aluminum bronze cold heading alloy, which is available as rod or wire. Made by the extrusion process it combines the economies of cold working, basic advantages of aluminum bronze and superior grain structure of extrusion process. Ampco Metal Inc.

☐ **19. VIBRATING SCREEN**—Bulletin 122-A describes Style M Vibrex Screen which employs 2-bearing circle-throw principle with adjustable stroke and easy angle adjustment. Machine may be floor mounted or suspended and may be used for sizing or separating material of any kind, wet or dry, in sizes from 2" to ⅛". Robins Conveyors Divn., Hewitt-Robins, Inc., Passaic, N. J.

☐ **20. GRINDER**—Bulletin describes the new DS grinder which is available in three units, floor stand, bench grinder, or fixture. It can be used for angular back-off and standard relief sharpening and makes radial-helical relief grinding just as easy. Taps, step drills, form milling cutters, form cutters, etc., can be radially relieved in your own shop with this machine. Burke Bartlett Co.

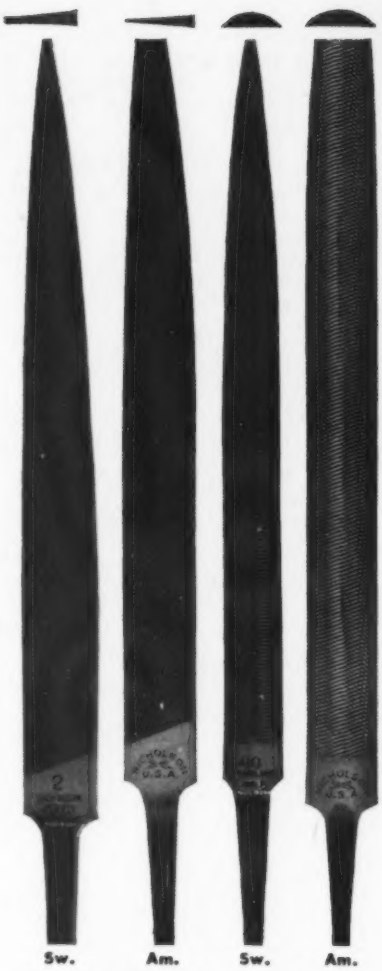
☐ **21. RESINS**—Booklet describes Cardolite, trade name for group of resins derived from liquid in shell of cashew nuts, and lists many of the applications for over 40 of these

(*Please turn to page* 16)

"PRECISION FILES FOR PRECISION WORK"

is a rule that pays off well in better results, fewer rejects, lower costs. This is one of a series of advertisements on special-purpose files. Save it for shop use and purchasing reference.

Subject: SWISS PATTERN FILES — **Prepared by Nicholson File Co.**



Typical comparisons of Swiss and American Pattern Files—Knife and Half Round shapes

Die making with Swiss Pattern Files

DIFFERENCE BETWEEN SWISS PATTERN AND AMERICAN PATTERN FILES

Nicholson X.F. Swiss Pattern Files are manufactured in accordance with the original Swiss designs or patterns and differ in a number of respects from American Pattern Files. Swiss Pattern Files were first made for jewelers, watchmakers and fine toolmakers. Today they are used wherever superfine precision filing is required.

Although the cross-sections of some Swiss Pattern and American Pattern Files are similar, many of the shapes are different. Other important differences are: (a) Swiss Pattern Files are made to more exacting measurements. (b) Their points are smaller and the tapered shapes have a longer taper. (c) They come in *seven* degrees of coarseness, against the three usually supplied in American Pattern.

USES. Swiss Pattern Files are used extensively in automotive and aircraft factories; in die-casting plants; by makers of delicate instruments and optical goods; by workers on precious metals; for finishing and dressing dies of all kinds; for wood and ivory carving; and for model making.

These files are primarily finishing files and in general are used for removing burs left from previous machinery operations, rounding out slots, smoothing up small parts, and final finishing on all sorts of delicate and intricate pieces.

SPECIAL GROUPS. The Nicholson X.F. Swiss Pattern line includes such special-purpose groups of files as: Die Sinkers Files; Round and Square Handle Needle Files; Filing Machine Files in various shapes, sizes and types; Silversmiths and Die Sinkers Rifflers. Individual types include: Crochet, Barrette, Slitting, Crossing, Pippin, Joint, Screw Head, Warding, Equaling, Pillar (in three standard widths).

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(*Continued from page* 14)

Cardolite resins in wide variety of industries—friction fortifiers, laminating and impregnating, waterproofing, oil stops, etc., etc. Cardolite is a phenolic product with special reactive characteristics. Irving Varnish & Insulator Co., Irvington, N. J.

☐ **22. COLOR SELECTOR**—Color selector for industrial maintenance finishes, of size approved for filing by purchasing agents and other buyers, is available from Oliver Johnson & Co., Inc. Color chips include industrial enamels, industrial floor enamels, one-coat wall paints, flat paints, and identification paints.

☐ **23. STEELS**—High speed steels and tool and die steels are the subject of new pocket catalog of working data published by the Latrobe Electric Steel Co. The 80-page booklet condenses descriptions, and heat treatment and application data and shop information covers weight, conversion and related tables. Data on each grade of steel is presented on two facing pages. Title of booklet is "Latrobe High Speed Steels, Tool and Die Steels."

☐ **24. HYDRAULIC GRINDER** — Bulletin CF-47-1 covers new Landis Type F plain hydraulic grinding machine which is furnished to swing work up to 14" or 16" in diameter. Length between centers ranges from 36" to 168". Machine will grind all types of heavy work weighing up to 6500 pounds. Landis Tool Co.

☐ **25. FIBERGLAS REINFORCED PLASTICS**—A must for your plastics file, this new 36-page booklet contains up-to-date information on the properties of Fiberglas-reinforced plastics, their range of applications, economics of manufacture and use, and manufacturing methods. It is well illustrated with application and manufacturing illustrations. The Owens-Corning Fiberglas Corp.

☐ **26. PAPER BAGS**—The care of paper bags during shipping and storage to insure maximum strength and utility is subject of illustrated booklet being distributed by Bemis Bro. Bag Co. A page of "Do's" and a page of Don'ts" forms an easily understandable guide.

☐ **27. REFRACTORY BRICKS**—Norton Refractory Bricks is title of new catalog just issued by the Norton Co. It describes Crystolon for boiler furnaces and gas generators, and Alundum brick, a fused alumina brick. Shapes and sizes are illustrated.

☐ **28. TRACING PAPER**—Papercloth is name of new technical paper developed by the Clearprint Paper Co., who invite inquiries for samples thereof. It is said to have marked stability under all atmospheric conditions, resisting stretching, shrinking and buckling. Its surface takes pencil and ink with equal facility. Maker says it is not damaged by creases or folding.

☐ **29. SPRINGS**—Bulletins entitled "28 Assortment" and "31 Assortment" cover a practical, trouble free, series of round wire springs for general use. Paragon Spring Co.

☐ **30. PORTABLE TOOL GUARD**—Bulletin describes the Flohr automatic radial guard for use on all portable horizontal tools. It protects not only the operator but adjacent workers as well. Guard prevents later ejection of chips, wire, material, etc., reduces wheel abuse and misuse of tools, and reduces accidents and lost time. Flohr Safety Equipment, Inc.

☐ **31. STAINLESS Pipe, Fittings**—Bulletin describes Astell stainless steel pipe, tubing and fittings. Illustrations and diagrams show fittings in detail, including stainless light wall welding fittings and stainless flanges. John B. Astell & Co.

☐ **32. INDUSTRIAL RADIO**—New point to point radio communication equipment in mining, lumbering and construction industries, ship-to-shore, etc., is subject of 8-page booklet No. B-3945, available from Westinghouse Electric Corp.

☐ **33. MERCURY LAMPS**—Sixteen types of Mercury vapor lamps are described in 24-page booklet No. A-5112 announced by the Lamp Division of Westinghouse.

☐ **34. SYNTHETIC SAPPHIRE**—You will find pamphlet "Why Sapphire" published by the Sapphire Products Division of the Elgin National Watch Co., of much interest, for it will give you information about the hardness, toughness and wear resisting qualities of industrial sapphire, the new engineering material and its use and service in various tools.

☐ **35. PORTABLE DUST COLLECTORS**—Bulletin describes portable dust collectors for rock drilling, general excavation work, quarries, etc., and portable industrial units for foundries, power plants, industrial plants, etc. James H. Markley.

☐ **36. WATCHCLOCKS**—Circular describes Chicago watchclocks for "watching the watchman." Chicago Watchclock Corp.

☐ **37. PLASTICS**—"27 Ways to Use Fabricated Plastics" shows interesting applications of plastics to many industrial, commercial and civilian products. Over 50 drawings and photographs illustrate detailed parts which are described in simple, non-technical language. The company uses a varied assortment of laminated and molding materials and cast phenolics. The Fabri-Form Co.

☐ **38. VALVES**—New valve catalog covers slide and butterfly valves of various types, with illustrations and data on dimensions, hole diameters, etc. The W. S. Rockwell Co.

☐ **39. BALLASTS**—Fluorescent lamp ballasts are the subject of bulletin GEA 4950 issued by the Apparatus Department, General Electric Co.

☐ **40. COLD CATHODE LIGHTING**—Technical data on line of standard cold cathode fluorescent lamps is contained in 1948 catalog of the Catho-Lite Co. Company says cold cathode fluorescent lighting paves way for substantial savings through reduction in relamping and maintenance costs.

☐ **41. DRAWING OIL**—Stuart's SuperKool Base Oil for deep, heavy-duty drawing operations with stainless steel, beryllium, copper and other difficult materials, and other applications, is the subject of 8-page booklet published by the D. A. Stuart Oil Co.

☐ **42. ELECTRIC PRODUCTS**—Catalog 107, 102 pages, termed the Federalog, contains complete information on the Federal Electric Products Company's line of motor controls, safety switches, service equipment, circuit breakers, panelboards, switchboards and bus duct.

☐ **43. SAMPLE CASES**—Catalog No. 139, 32 pages, illustrating and giving detailed information about large variety of salesmen's sample cases, has been issued by the Fibre Products Mfg. Co. Line includes fitted cases, sample trunks, baskets and boxes, catalog cases, brief cases and zipper cases. You will find it a handy guide.

☐ **44. BOLTS, WASHERS, RIVETS, NUTS**—90-page catalog, No. 47, practically indexed, gives complete information on all types of carriage, machine, lag, plow, guard and spring, elevator, blank and stud bolts, cap screws, stove bolts, rivets, hot and cold pressed nuts of all types, washers, etc. It also contains tables on wire, washer and screw gages, diameters, threads, etc. Clark Brothers Bolt Co.

☐ **45. TUMBLING BARRELS**—Four two-page bulletins issued by Lupomatic Industries, illustrate and describe tumbling barrels of several types for cutting down, deburring, burnishing and polishing metal and plastic parts. Line includes dry process single tumbler barrels; multiple unit barrels for wet or dry process; wet process, single and multiple units, and wet ball burnishing machines.

☐ **46. SLITTING SAW BLADES**—Bulletin describes slitting saw blades for milling operations, embodying the triple-chip technique, dual drive adaptation, blade interchangeability, and range of pitch. The Motch & Merryweather Machinery Co.

☐ **47. "WALKIES", BATTERY Powered Trucks**—Worksaver trucks, the Yale & Towne Manufacturing Company's line of "walkies" are battery powered hand trucks, with the electric-lift and electric-motivation features of the ridden truck. They

(*Please turn to page* 19)

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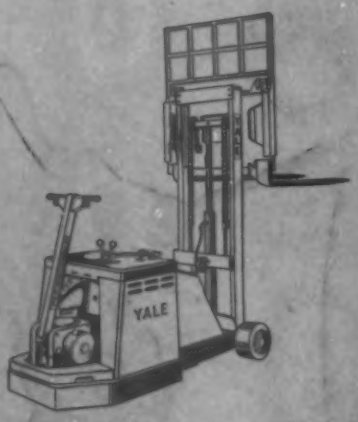
JUST A FEW PENNIES A DAY—That's all it costs to operate the portable Yale Midget King Electric Hoist. Simply pull a lever and it handles loads from ½ to 2 tons with ease, speed and safety. Other Yale Electric Hoists to 12 tons . . . hand chain blocks to 40 tons.



NEWEST ADDITION TO the Yale line is the Worksaver. It travels and lifts by electric power. Has 2 forward and reverse speeds. 7 styles, with capacities from 1,000 to 6,000 lbs.

HANDLING MORE MATERIAL with less effort is routine for Yale Hand Lift Trucks. Wide range of models. Single and multiple stroke; mechanical and hydraulic lift. Capacities from 1,000 to 20,000 lbs.

AWKWARD MATERIAL HANDLING JOBS are no trouble at all for this Yale Crane Truck—one of a group of the most complete line of electric trucks in the industry. It can lift, slew, boom and carry loads up to 10,000 lbs. with ease and speed.

NEW!

An All-Steel Scale with Outboard Bearings

This new Yale Load King Dormant Platform Scale bears an old reliable name, yet it is so modern in design that there's not another quite like it. Its special outboard bearing construction makes it impossible to tilt no matter where the load is placed on the platform. This means you cut weighing time, get prolonged accuracy, lowest possible maintenance costs, increased scale life. Capacity to 11,250 lbs. Other Yale Scales to 60,000 lbs.

See your local telephone directory for Yale representative, or send for new Catalog R-T. The Yale & Towne Mfg. Co., 4562 Tacony St., Philadelphia 24, Pa.

TOOLS THAT KEEP INDUSTRY "ON THE MOVE"

YALE

SCALES
HAND AND ELECTRIC HOISTS
HAND LIFT AND ELECTRIC TRUCKS

(*Continued from page* 16)

are described in new 3-color 30-page bulletin, types catalogued being the tilting fork truck, non-tilting fork, low-lift pallet, low-lift platform, high-lift platform, tractor, and electric tinplate truck.

☐ **48. V-BELT DRIVES**—Catalog of 16 pages describes Transco V-Belt drives with combination groove sheaves for "A" or "B" section V-belts, tells how to select a standard drive using stock sizes of sheaves and V-Belts, and contains comprehensive list of stock drives. Transmission Machinery Corp.

☐ **49. STEEL SERVICE**—Illustrated booklet gives summary of the stocks, facilities and personnel of new Pittsburgh plant of Joseph T. Ryerson & Son.

☐ **50. STAINLESS STEEL PIPING**—New booklet "Stainless Steel Piping—Why and Where to Use It", gives data on stainless steels, with detailed description of types 304, 347, and 316 which a survey indicates should serve 95% of industry's requirements, and information on standardization of pipe and fittings, selection of pipe joints, fabrication by welding, etc. Tube Turns, Inc.

☐ **51. DIE HEADS**—New bulletin No. 32, "Selecting the Proper Die Head for the Job" is available from The Eastern Machine Screw Corporation. It gives information on how to select the proper size and style of die head, special applications of die heads, and insert chasers.

☐ **52. TOOL HOLDERS, ADAPTORS**—Catalog No. 49, 96 pages, gives detailed information by text, illustration and diagram, about Beaver quick-change tool holders, solid carbide blade milling cutters, standard adaptors and tools, and Rapid drill chucks and collets. Several pages are devoted to installation instructions and engineering data. Beaver Tool & Engineering Corp.

☐ **53. ELECTRON TUBES**—Booklet RSB1000, provides detailed descriptions and operating data for Special Red tube line announced by the Commercial Engineering Section, RCA Tube Department. These small electron tubes are made for highly critical industrial and commercial applications where long life, uniformity, stability and resistance to impact and vibration are essential.

☐ **54. WELDING PRODUCTS**—AMSCO welding products for reclamation and hardfacing are the subject of Bulletin 1047-W issued by the American Manganese Steel Divn. of American Brake Shoe Co. Nickel-manganese steel welding electrodes, Mo-Mang steel electrodes, Mang-Co coated electrodes, and other types of electrodes and welding rods are described in detail, with illustrations showing application.

☐ **55. DIE-LESS DUPLICATING**—New 40-page Di-Acro catalog which contains illustrations and specifications of all Di-Acro precision machines, now available in six types and 18 models, is announced by O'Neill-Irwin Mfg. Co.

☐ **56. MOTORS**—Bulletins describe in detail construction of the A. O. Smith Company's Permamotor from stator to rotor and shaft assembly, and fractional h-p rating Permamotors. A. O. Smith Electrical Mfg. Co.

☐ **57. PICKLING**—Technical Service Data Sheet No. 13-1, describes Rodine standard control for fast, efficient economical pickling. Various types of Rodine are available to meet various steel pickling problems, depending upon kind and strength of acid used, nature of steel, and scale or incrustation to be removed. American Chemical Paint Co.

☐ **58. MILLING MACHINE**—Keller type BG tracer-controlled milling is subject of copiously illustrated bulletin issued by Pratt & Whitney. This is a composite piece of literature which describes the several sizes of the Keller BG (large) machines with complete specifications, etc. Designed for accurate, economical reproduction, Kellering is said to pave way for varied cost reductions.

☐ **59. SOLDER**—Descriptive leaflet on solder, describes basic and special solder types produced by Federated Metals Division, American Smelting & Refining Co. Discussed are acid core, rosin core, solid wire, and body solders; also, bar, strip, triangle, segment, drop, pig and foil. It is one of a series of special descriptive leaflets on non-ferrous metal available.

☐ **60. CRANKSHAFT GRINDER**—Portable crankshaft grinder for grinding all crankshaft throws on internal combustion engines with cylinders in line, is described in bulletin issued by Waterbury Tool Co. It is termed a labor saver and a money saver.

☐ **61. MATERIAL HANDLING**—The Flexo-veyor, a portable, flexible and reversible power driven conveyor for bags, bales and cartons, operating around curves and turns is the subject of Bulletin No. 100 issued by E. C. Horne Machinery Co.

☐ **62. PAINT HEATER**—Paint heater for the industrial and finishing trade is described in circular issued by Bede Products, Inc. The heater is applicable to all types of finishes —lacquers, synthetics, baking enamels, wrinkles, etc. Greater film thickness and faster spray gun performance are claimed.

☐ **63. MAGNIFIER**—Illuminated magnifier known as the Flash-O-Lens, a handy instrument for all types of work is subject of bulletin issued by the Andrew Technical Service. It spotlights the work as it magnifies. Battery models and models that can be operated on any AC or DC outlet are described. Unit is light and portable.

☐ **64. DRILLING MACHINE**—Cleereman Model 325 single unit sliding head drilling machine is subject of bulletin available from Bryant Machinery & Engineering Co. Machine is adapted to wide variety of manufacturing operations. Standard accessories include manually indexed 4-position turret feed trip.

☐ **65. INDUSTRIAL SEATING**—Catalog No. 48 presents seating for varied industrial purposes, ranging from chairs and stools for press operators and sewing machine operators to plant cafeteria, office and first-aid room furniture. Guide recommends the most efficient type of chair for a particular operation. Royal Manufacturing Co., Industrial Seating Divn.

☐ **66. BOILER FEED PUMPS**—Series of boiler feed pumps designed for pumping hot water and for other installations requiring high water pressure are subject of bulletin issued by Jacuzzi Bros., Inc. These multi-stage centrifugal pumps are produced in a vertical design which cuts floor space to minimum and does away with need for special foundations and flexible couplings. Design is said to make for higher efficiency

(*Please turn to page* 20)

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(*Continued from page* 19)

and less maintenance. Units vary from ½ to 20 h-p.

☐ **67. STEAM BOILERS**—Hot Steam boilers, sizes 2 to 50 h-p, gas or oil fired, steam pressure 100 lbs. or higher if desired, are the subject of bulletin describing Alert boilers, designed for intermittent or continuous service. The Alert is a fully automatic package type unit, self operating, and occupies small floor space. ASME code construction. Alert Engineering Products.

☐ **68. CARBIDE TOOL GRINDER**—Carbide Tool Grinder Catalog No. 220 illustrates and describes line of wet and dry carbide tool grinders, chip breaker tool grinders and diamond finishing tool grinders. It gives specifications for each machine. Hammond Machinery Builders, Inc.

☐ **69. MATERIAL HANDLING**—52-page catalog No. 7-11, illustrates and describes all Mercury material handling equipment—fork trucks, lift trucks, tractors and trailers. The Mercury Manufacturing Co.

☐ **70. WIRE WORKING MACHINERY**—The WiroMatic wire straightening and cut-off machines are described in bulletin issued by The Dore Manufacturing Co. Capacities range from .040 to .156 inch diameter wire, .120 to .250 in. dia., and .120 to .312 in. dia. Spinners and reels are also described.

☐ **71. BALL BEARINGS**—M-R-C Bulletin No. 26, revised to date, listing ball bearings of various makes in numerical order and corresponding sizes of M-R-C bearings, is available from the Marlin-Rockwell Corporation. It contains a list of bearing numbers of over 12,000 different ball bearings made by American ball bearing manufacturers.

☐ **72. ELECTRICAL CONNECTIONS**—Thorough coverage of electrical connecting devices with specifications, illustrations, and suggestions for inspection, installation, etc. is claimed for the new Howard B. Jones catalog No. 16, 32 pages.

☐ **73. ELECTRONIC MICROMETER**—Electronic micrometer for accurate on-the-job measurement to split 10ths, providing large linear range of minus or plus .0005" or minus or plus .005" ,is subject of bulletin issued by Graham-Mintel.

☐ **74. HEIGHT GAUGE**—Chesterman stabilized easy-reading height gauge said to save time and labor in the making of accurate measurements, is described in bulletin issued by George Scherr Co., Inc.

☐ **75. KODAK TRANSFER**—Kodak Transfax is a white light-sensitive, quick-drying preparation making it possible to put lettering, designs or legends directly on metal, plastic, and non-absorbent surfaces. It requires no darkroom. It will render lines .003" apart. Finished reproduction takes as little as 5 minutes. Image does not deteriorate or change color with time. Only requirement is non-absorbency and freedom from grease. Can be used for wiring diagrams, dials, instrument panels, fabrication instructions, etc. Bulletin available from Industrial Photographic Divn., Eastman Kodak Co.

☐ **76. GAGES**—Condensed Catalog A covers indicating gages, dial indicators, dial comparators, fixed limit gages, adjustable limit gages. Standard Gage Co.

☐ **77. FINISHING COMPOUNDS**—Bulletin describes diamond superfinishing compounds which give mirror-like surfaces in minutes and seconds. Compounds are available in tube, stick and powder forms, in various color grades and particle sizes. Magnus Chemical Co., Inc., Industrial Processing Division.

☐ **78. CARBON-GRAPHITE Specialties**—"Stackpole Carbon Specialties Booklet", 44 pages, describes various specialties such as arc tube anodes, battery carbons, ground rods, electrical contacts, carbon piles, chemical carbons, clutch rings, brazing and welding carbon supplies, carbon molds and dies, etc. Stackpole Carbon Co.

☐ **79. SUMP CLEANER**—Honan-Crane sump cleaner and oil transfer unit is the subject of catalog issued by Honan-Crane Corp. This is one-man operated. Machine tool sump can be cleaned in 10 minutes. Liquids can be lifted from below floor level. Machine is of portable type.

☐ **80. THERMOSTATS**—Thermostats providing a wide range of selectivity for manufacturers of electrical appliances and heating units are described, along with the company's heat control and engineering service, in a new series of leaflets announced by Westinghouse Electric Corp., Nos. B-3954, B-3939, and B-3938.

☐ **81. CLEANING ALUMINUM**—Cleaning aluminum for spot welding and painting, protecting finished work against corrosion, and developing smooth, lustrous finish is subject of special feature article in January-February 1948 issue of Oakite News Service. Oakite Products, Inc.

☐ **82. PILLOW BLOCKS**—Folder describes two quality ball bearing pillow blocks termed the economy twins, for light duty applications. Main feature of the EDR pillow block is insulation against vibration. The other of the twins has sturdy cast housing, single row bearing ground to permit normal shaft deflections and misalignment. The pillow blocks are prelubricated. Copy of bulletin "Economy Twins" is available from Ahlberg Bearing Co.

☐ **83. GAS MASKS**—Series of illustrated bulletins issued by the Acme Protection Equipment Co. presents a wide range of protection equipment for use in hazardous gas and smoke atmospheres. They also contain information on proper canisters to use for smokes, fumes, mists, vapors, gases, ammonia, etc.

☐ **84. BORE GAGING**—DuBo gage for bore gaging is described in six-page bulletin issued by Standard Gage Co., Inc. Gages are light and sturdy in single end and double end types.

☐ **85. PERMANENT MAGNETS**—"G-E Permanent Magnets" and "G-E Permanent Holding Assemblies" are the subject of printed matter that the Metallurgy Division, Chemical Department, General Electric Co., will be glad to send to you.

☐ **86. NICKEL SILVER**—Catalogs tell about Riverside Nickel Silver, and Riverside Phosphor Bronze and Beryllium Copper. Riverside nickel is tough, and highly resistant to wear and corrosion, though it is easy to machine in any manner. The Riverside Metal Co.

☐ **87. VALVES**—240-page catalog illustrating and describing iron-body wedge gate valve and hundreds of others, is available from the Kennedy Valve Manufacturing Co.

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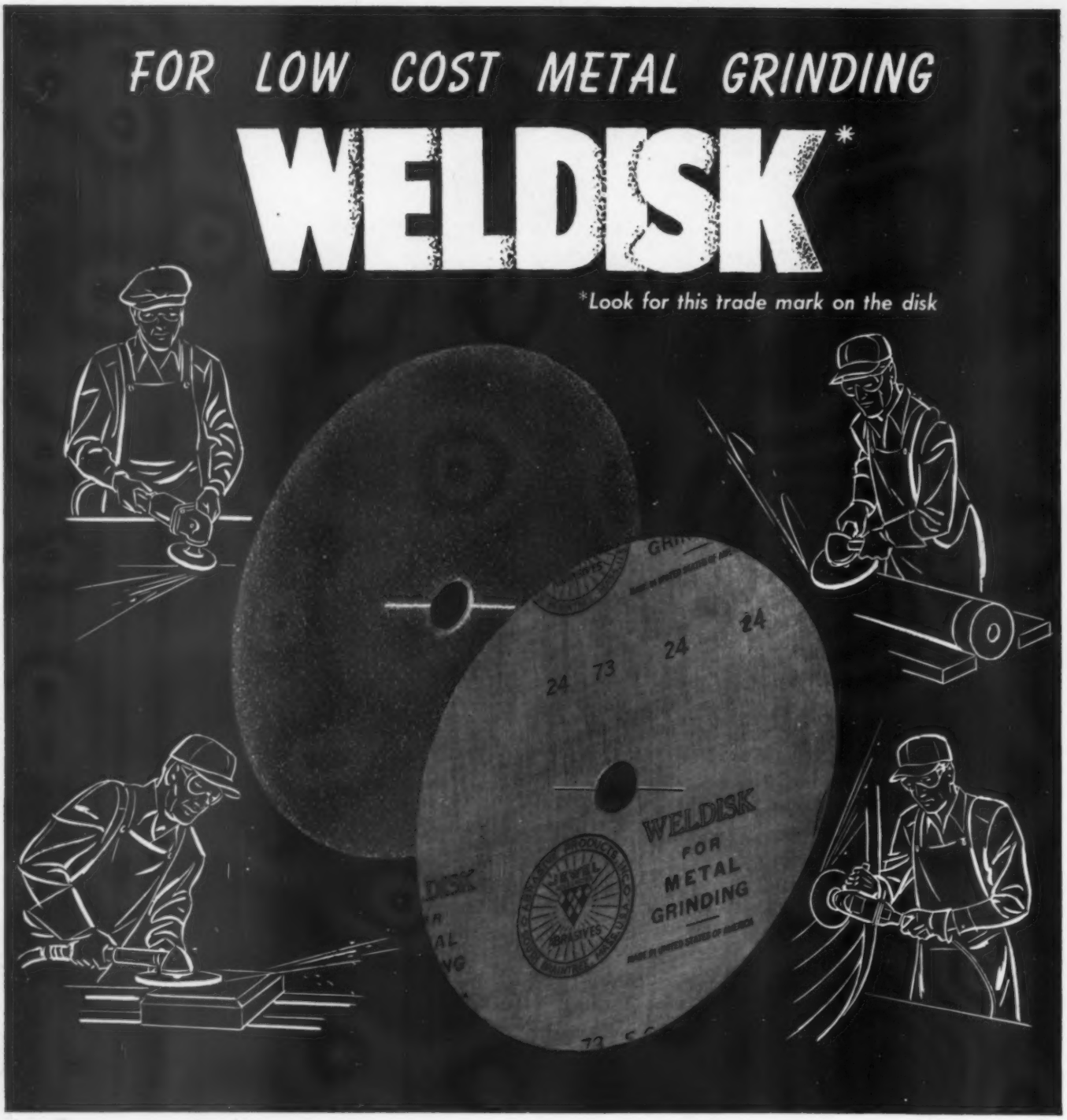

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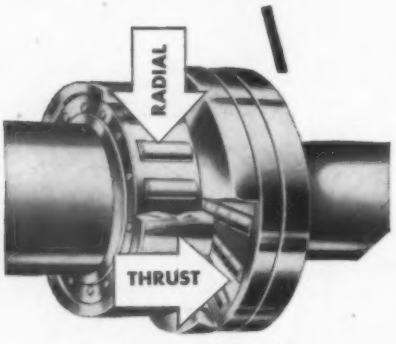

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Right Angle Loading splits every load into components of pure radial and pure thrust. Thus, where combined loads are involved, a Rollway Radial Bearing takes the radial load . . . a Rollway Thrust Bearing takes the thrust load.

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HISTORICALLY SPEAKING

"REMEMBER THE ALAMO"*

GENERALLY SPEAKING

★★★★★

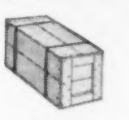
"the container is part of the product"

... and this, also, is well worth remembering. It is important to *you* because "part of the product" engineering provides for the better and more economical packing and shipping of your products.

It assures lightweight, compact, extra-strong containers that are designed specifically to the product. It means that the container and the product can frequently move down the production line together—as a unit.

Our engineers will be glad to help provide a better container for your product. Write today. Also request your free copy of the new issue of "The General Box."

* *The ringing war-cry of Sam Houston's men at San Jacinto; in memory of the 180 gallant Texans who died with Cols. Wm. B. Travis, James Bowie and Davy Crockett, at the "Alamo Mission."*



General Nailed Box

General Cleated Corrugated Container

General Corrugated Box

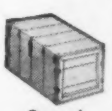
GENERAL BOX COMPANY ... engineered shipping containers

★★★★★

GENERAL OFFICES:
48 W. Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon, Natchez. Continental Box Company, Inc.: Houston, Dallas.

General Wirebound Crate



General All-Bound Box

Generalift Pallet

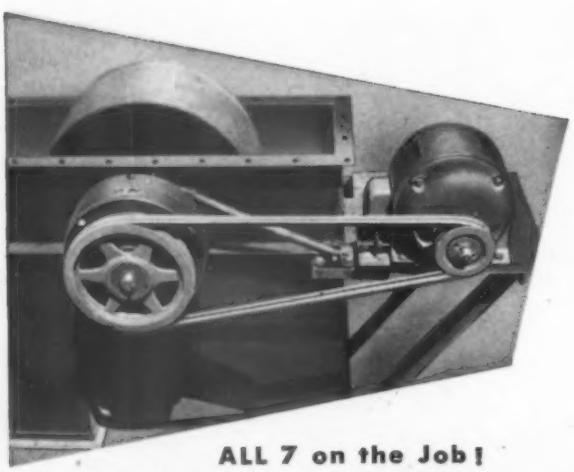
are you getting ALL 7 advantages from the slow-speed drives you use?

	DRIVE "A"	AMERICAN REDUCTION DRIVE	DRIVE "C"
1. Fast, Flexible Speed Changes	?	✓	?
2. Simple Installation	?	✓	?
3. Twice-a-year Attention	?	✓	?
4. No Supports, No Foundations	?	✓	?
5. Space-Saving Design	?	✓	?
6. Weight-Saving Construction	?	✓	?
7. Maximum Efficiency	?	✓	?

for lower operating costs— CHECK ALL 7 !

Only American Reduction Drives give you *all* the advantages you need to reduce slow-speed equipment operating costs! You get fast, easy speed changes—by simply substituting sheaves of different diameters. You can get any driven speed below 154 r.p.m. with standard stock parts. You save installation time and money—the Speed Reduction Unit mounts right on the shaft of the driven machine. No special engineering, no costly foundations or supports are needed. Patented compact design gives you extra floor space. Best of all, you increase equipment life because the primary belt drive cushions equipment-damaging shock loads. Semi-annual lubrication of the unit is all that is required.

For lower operating costs, check all 7 *first!* Write for the complete installation and specification details in the American Reduction Drives Handbook, today.



ALL 7 on the Job!

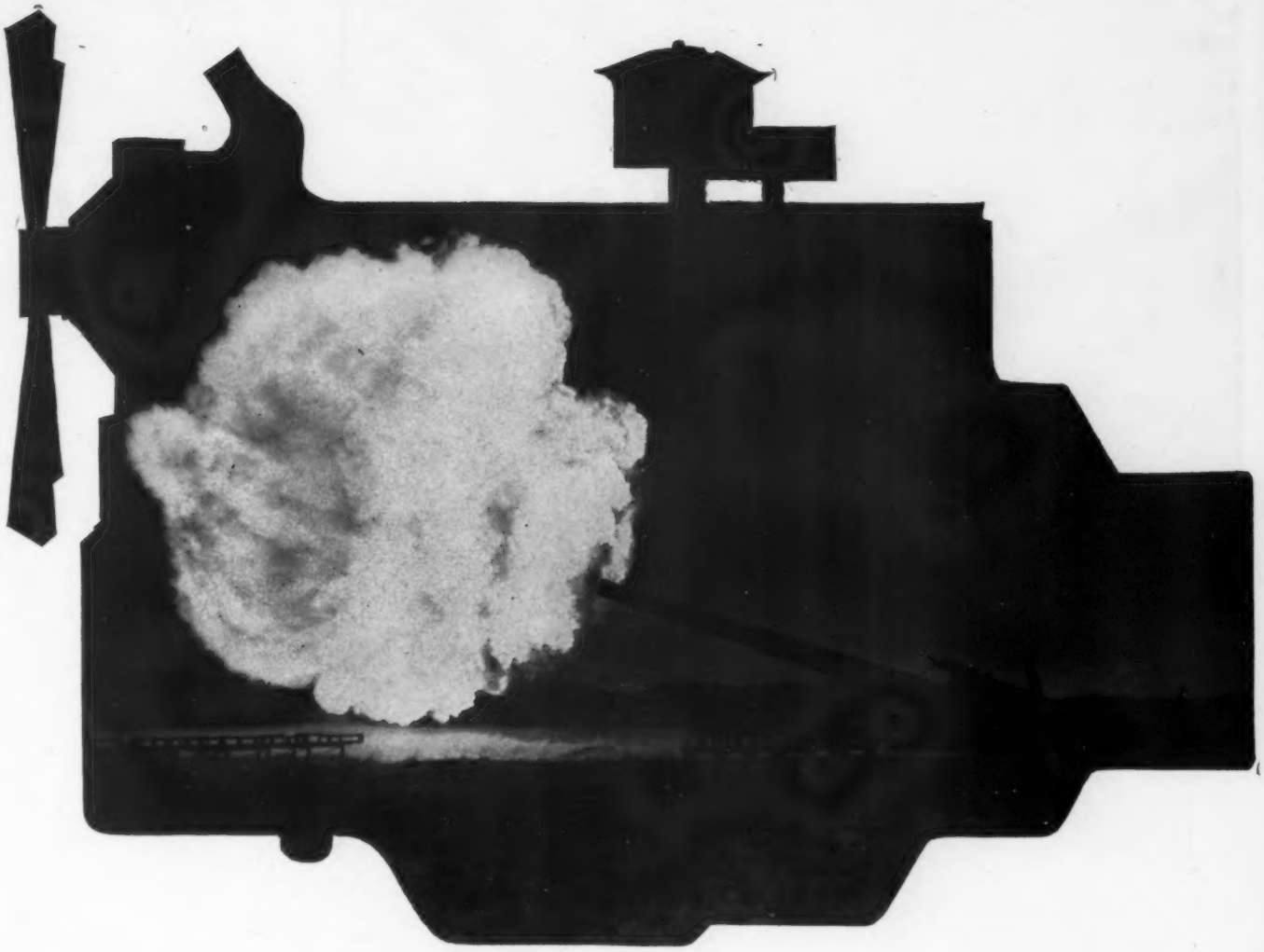
American Reduction Drive operating grain elevator. User says: "No lubrication problem to worry about—installation a matter of minutes."*

*Name on request.

NOW...Get Immediate Delivery...See your American Drives Distributor

The American Pulley Company

4286 WISSAHICKON AVE. • PHILADELPHIA 29, PA.



"More of this for my car, please"

CITIES SERVICE

TAILORED down to size, explosions like this are whamming through your car's engine at the average rate of 8000 per mile traveled. Every time the wheels turn once, from twelve to sixteen explosive charges are fired.

Cities Service has devoted more than 20 years of research, to make these explosions in your engine—the combustion process—more efficient; to decrease loss of unburned fuel.

Two exclusive Cities Service instruments, the Power Prover and the Heat Prover are blazing bright new trails in combustion research. The Power Prover measures the amount of unburned fuel in exhaust gases of gasolene engines. The Industrial Heat Prover measures combustion efficiency of any type furnace using any form of fuel. Together these remarkable instruments are cutting costs, reducing fuel consumption and improving combustion efficiency of thousands of motor vehicles and hundreds of industrial plants.

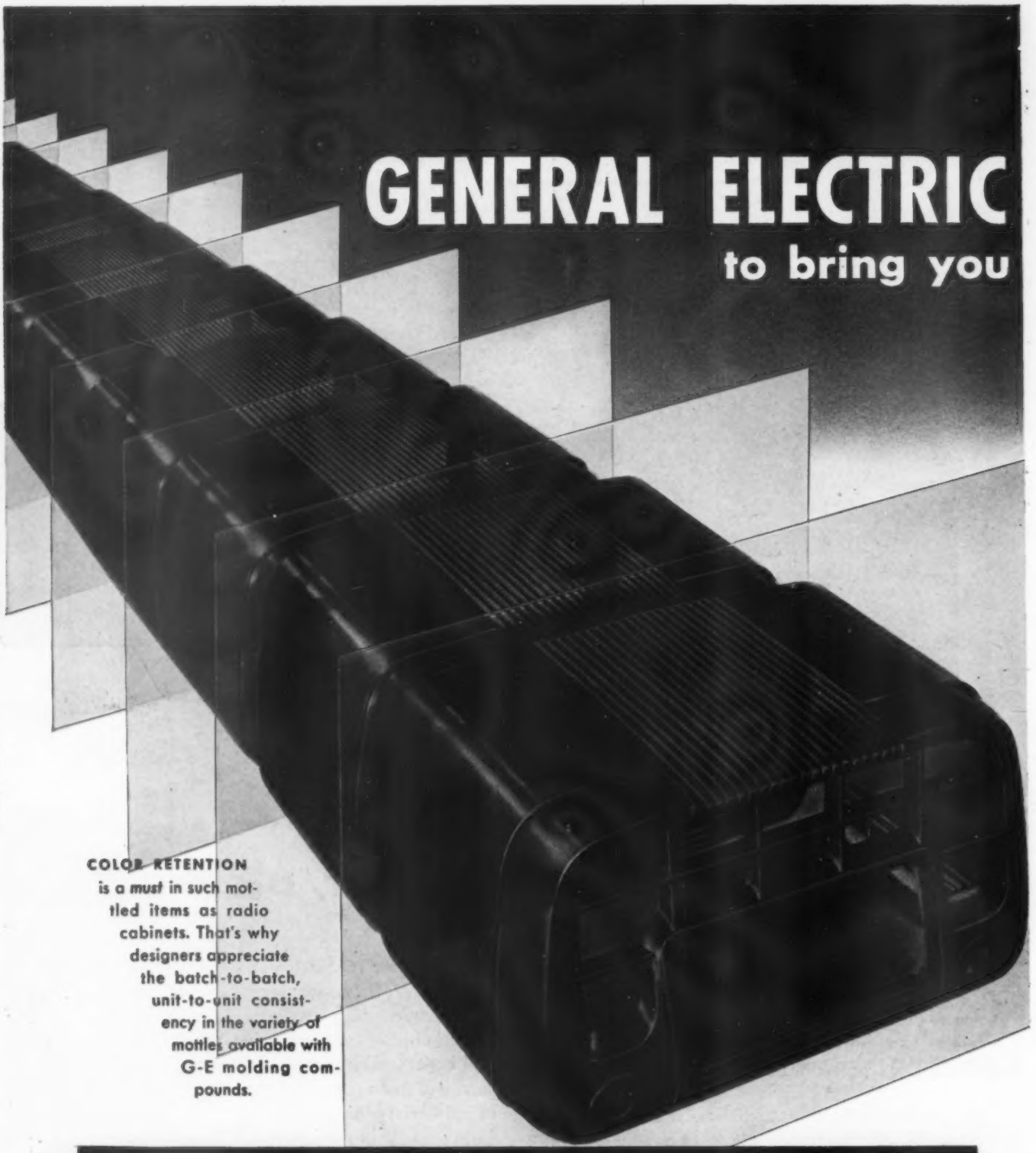
This kind of research experience, together with skilled training and a thorough knowledge of combustion and of lubrication is behind every Cities Service lubrication engineer. Why not call in one of these "professional worriers" to look over your lubrication problems. Write Cities Service Oil Company, Sixty Wall Tower, Room 98 New York 5, N.Y.

CITIES SERVICE OIL COMPANY

NEW YORK • CHICAGO

In the South: ARKANSAS FUEL OIL COMPANY

GENERAL ELECTRIC
to bring you



COLOR RETENTION is a *must* in such mottled items as radio cabinets. That's why designers appreciate the batch-to-batch, unit-to-unit consistency in the variety of mottles available with G-E molding compounds.

G-E PHENOLIC VARNISHES AND LIQUID RESINS

You'll be amazed at the variety of phenolic varnishes and liquid resins manufactured by General Electric. Like G-E molding powders, they're quality-controlled to insure uniform properties from batch to batch.

You'll find a wide assortment of properties—excellent physical strength and surface hardness; superior resistance to weather, water, heat, and chemicals; thorough penetration into paper, wood, and other permeable materials; and outstanding electrical characteristics.

If you do laminating, bonding or impregnating—and if you want consistent quality in dependable phenolic varnishes and liquid resins—investigate General Electric, right away! Write for more information.

NOW AVAILABLE!

MOLDING COMPOUNDS

More Uniform Results . . .
Fewer Rejects . . .
Lower Production Costs

It's no news that General Electric makes its own plastics molding compounds. A pioneer in commercial plastics, G. E. has manufactured phenolic powders for many years.

But it is news that quality General Electric materials are now available to the general molding industry. Increased production facilities permit placing these high-grade powders at your disposal. Here are some of the advantages of General Electric molding compounds—advantages which can bring you more uniform results, fewer rejects, lower production costs.

- **Quality control.** Critical tests check each batch of compound before shipment. This assures you of consistent physical properties—such as high mechanical and electrical strength.

- **Uniform molding behavior.** Every batch of a G-E powder you order will mold the same as every previous batch. Specific gravity, flow, pourability, shrinkage, apparent density—all are checked, all must conform.

- **Wide choice of materials.** Choose from a number of standard G-E materials. You can have phenol or phenol-modified resins with wood flour, cotton flock, rag, or asbestos fillers, in colors or mottled effects.

- **Custom-tailored compounds.** Be as exacting as you like. If standard powders won't do your job, General Electric has the experience and facilities to formulate a special compound to meet your requirements.

- **Detailed data sheets.** You won't have to guess about powder properties or performance characteristics. Extensive G-E laboratory tests and actual service trials give you complete technical information.

- **A dependable source of supply.** You're sure of ample deliveries of G-E compounds at all times. General Electric manufactures its own essential raw materials, such as phenol.

- **Immediate technical service.** Call on G-E application engineering to help solve your difficult molding problems. Trained technicians stand ready to lend you their years of experience plus complete laboratory facilities.

Put added assurance into your molding operation. General Electric molding powders can save you time, trouble, and expense. If you're interested, find out more today! Write Section EA-4, Compound Division, Chemical Department, General Electric Company, Pittsfield, Massachusetts.

GENERAL ELECTRIC

Spring Worries?

Our Factory-Trained Field Men Are Near You . . .

When your spring procurement problems indicate the need of a specialist at your elbow, send out a call for one of our 38 trained men constantly in circulation in the industrial field. With coverage like this, you will get prompt if not immediate action.

This is one of the many good reasons why it pays to do business with this alert group of seven spring plants.

SPRINGS
SMALL
STAMPINGS
WIRE FORMS

THE BEST SEVEN SOURCES FOR MECHANICAL SPRINGS

ORIGINAL DIVISIONS OF ASSOCIATED SPRING CORPORATION

WALLACE BARNES COMPANY
BRISTOL, CONNECTICUT

THE WILLIAM D. GIBSON COMPANY
1800 CLYBOURN AVE. CHICAGO 14,

RAYMOND Manufacturing COMPANY
CORRY, PENNSYLVANIA

BARNES-GIBSON-RAYMOND
6400 MILLER AVE., DETROIT 11, and ANN ARBOR, MICH.

. . . . AND DUNBAR BROTHERS COMPANY DIVISION, BRISTOL, CONN.
OHIO DIVISION, 1712 EAST FIRST STREET, DAYTON, OHIO
IN CANADA, THE WALLACE BARNES CO., LTD., HAMILTON, ONT.

You Choose Bait to "Fit" Your Fish

BUY V-BELTS THE SAME WAY!

WORMS are OK for perch, but using them for marlin is just about as unprofitable as trying to use the same type of V-belt under all variations of V-drive operating conditions. That's why Goodyear offers industry's most complete line of V-belts — *a special construction to satisfy every drive requirement.*

Today Goodyear alone builds COMPASS-V-STEEL belts, bodied with wiry super-strength steel cables, that banish stretch and maintenance headaches. Goodyear also builds belts sinewed with multiple, high-tensile, resilient cords to withstand sudden shock overloads. Belts with single-plane endless cord load-carriers for high flex-life on fast, small-pulley, short-center drives. And open-end V-belting with special fabric body of high fastener strength.

Drive-fitted by the G.T.M.

When desired, any of these time-proved constructions can be supplied — built with oil-resistant, heat-resistant or non-static rubber — to insure a belt exactly suited to your individual problem. The G.T.M. — Goodyear Technical Man — will gladly recommend the proper Goodyear V-belt to give you long, trouble-free service at lowest ultimate cost. Write: Goodyear V-Belt Sales Dept., Akron 16, Ohio.

GOODYEAR INDUSTRIAL RUBBER PRODUCTS
GTM-Specified COMPASS-V-STEEL BELT
A Load-carrying section of endless high-tensile steel cable.
B Vents open between pulleys, dissipating heat.
C Vents compress rounding pulleys, giving continuous gripping surface.
D Highest quality rubber underbody.
E Sturdy, bias-laid fabric cover resists wear.
Made in all standard cross sections.
A
B
C
D
E
IT'S A GREAT BELT FOR "PROBLEM" DRIVES
GTM
1898
50
GOODYEAR ANNIVERSARY
1948
FOR BELTS, HOSE, MOLDED GOODS, PACKING, TANK LINING built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

Compass—T.M. The Goodyear Tire & Rubber Company

GOODYEAR

V-BELTS

AO Sta-Set Finger Cots are

"Tailored To The Job"

These AO Finger Guards are built to the same protective, comfort, and "tailored-to-the-job" standards as the larger items of AO Safety Clothing. The 8X141 Finger Cots, made from soft, flexible grain leather, are ideal for jobs where sensitivity of touch is a must, as in soldering small wire. For jobs such as polishing, burring and grinding small parts, where rough usage is customary, companion Finger Cot 8X142 of chrome tanned split leather is recommended.

AO Finger Cots stay put on the finger! They are held in place by an elastic strap which allows full freedom of finger movement. Available in small, medium or large sizes. Your AO Safety Representative can give you speedy delivery.

Safety Division of American Optical COMPANY

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

A JOB FOR A MAN

WITHOUT A BOY

With Spang CW Pipe even close center bends are easy to make, without the use of pipe filler. And you can make them with full confidence that Spang CW will not fracture or crush. For more than 100 years Spang Pipe has been known for its excellent bending qualities.

Speed your jobs by using Spang CW . . . the pipe that's famous for the following qualities:

Easy to Cut • Bend, Thread or Weld • Uniform Lengths • Smooth Inside Surface • Sound Weld from End-to-End of Pipe • Accurate Threaded Ends • Accurate Size • High Concentricity.

In spite of the great demand, your Spang distributor will do everything possible to speed the delivery of your orders for Spang CW Pipe.

SPANG-CHALFANT

Division of The National Supply Company

EXECUTIVE OFFICES: PITTSBURGH, PA.

District Sales Offices: Atlanta; Boston; Chicago; Denver; Detroit; Houston; Los Angeles; New York; Philadelphia; Pittsburgh; St. Louis; San Francisco; Tulsa

SPANG CW

QUALITY *that is recognized wherever pipe is used*

Sturtevant Blenders handle all intake and discharge through one opening. Simple, single lever opens and closes gate. Illustration at left shows machine receiving . . . right discharging.

4-WAY MIXING ACTION

Assures Uniform, Perfectly Blended Batches with Sturtevant *Rotary Batch Blenders*

Because Sturtevant Rotary Blenders use a 4-way mixing action, they provide a *thoroughly blended product* no matter what the ingredients . . . densities . . . weights . . . finenesses . . . or other physical properties of the materials to be blended.

Here's how they operate—as materials are poured into the receiving hopper, they are picked up by the revolving buckets, and carried to the top of the blending chamber where they are cascaded and intimately mixed. At the same time the drum revolves forcing the materials from both ends toward the center of the drum . . . while the swinging chute, which is in the blending position produces an important lateral fourth mixing action. The result, a perfect blend with *no* substances floating to remain unmixed.

Investigate Sturtevant Rotary Batch Blenders. They are available in many sizes with capacities from 1000 to 7500 lbs. Write for details and specifications.

STURTEVANT
MILL COMPANY
107 Clayton Street, Boston 22, Mass.
Designers and Manufacturers of
CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS
MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

FLEET is the word for PURDY SERVICE on STEEL and ALUMINUM

A COMPLETE WAREHOUSE SERVICE—

A modern warehouse built for fast steel handling
Phone service that takes your order in 30 seconds
Precision slitting and shearing on high speed machines
24-hour delivery by the Purdy fleet of fast trucks

The **PURDY** *Line*

STAINLESS STEELS
COLD FINISHED STEELS
SPRING STEELS
TUBING
DRILL ROD
COLD ROLLED STRIP STEEL
ALUMINUM SHEETS AND COILS

A. R. Purdy Co.

ORIENT WAY & PAGE AVE., LYNDHURST, N. J.— Tel. Rutherford 2-8100

Connecticut . . ENterprise 6400 Philadelphia . . ENterprise 6040 Trenton . . . . WX 7414
New York . . . CHelsea 3-4455 Newark . . . . HUmbolt 2-5566

THE "Forgotten" MOTOR

So quiet, so dependable, so completely undemanding of attention . . . that plant engineers almost forgot it was there . . . the 90 horsepower motor pictured above remained continuously in operation for *eighteen* years! During that time so little attention was given the motor that the operators of the flour mill where it was installed forgot the name of the maker whose motor was serving so well. After eighteen years the motor was repaired for the first time. When the accumulation of flour and dust was removed from the caked nameplate it was discovered to be a Wagner wound-rotor Motor.

Users of motors have discovered that the name Wagner is a synonym for reliability and that motors bearing this famous name will give continuous, trouble-free service.

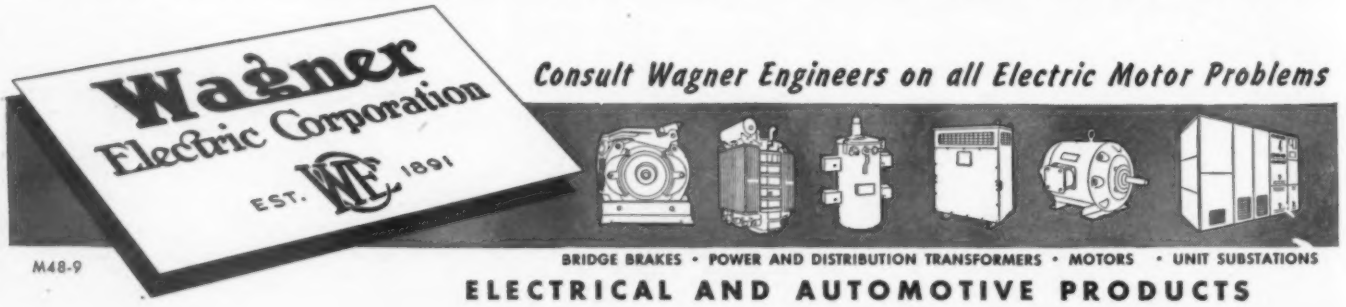
If you want motors that will perform reliably—motors that you can install and "forget," consult any of our twenty-nine branches. They are located in principal cities and are manned by trained field engineers who will help you solve your motor problems.

Pictured above is a Wagner totally-enclosed fan-cooled motor which is recommended for dusty, dirty locations. Wagner makes a complete range of motors for every application.

Wagner also provides quick, convenient, nationwide service facilities for motor users.

Bulletins on the complete line of Wagner Quality Motors will be sent upon request.

Wagner Electric Corporation
6360 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.



M48-9

BRIDGE BRAKES • POWER AND DISTRIBUTION TRANSFORMERS • MOTORS • UNIT SUBSTATIONS

ELECTRICAL AND AUTOMOTIVE PRODUCTS

FOR FAST, EASY CUTTING

of Sheet Metals

Specify STANLEY *the greatest name in tools*

Reg. U.S. Pat. Off.

HARDWARE · HAND TOOLS · ELECTRIC TOOLS

● Included in the line of Stanley Electric Tools are portable and bench type UNISHEARS with capacities of 18, 16, 14, 12 and 8 gauge hot rolled steel, other materials in proportion.

A nearby Stanley Industrial Distributor will supply the right tool for the job.

STANLEY ELECTRIC TOOLS, NEW BRITAIN, CONNECTICUT

32 ALUNDUM®

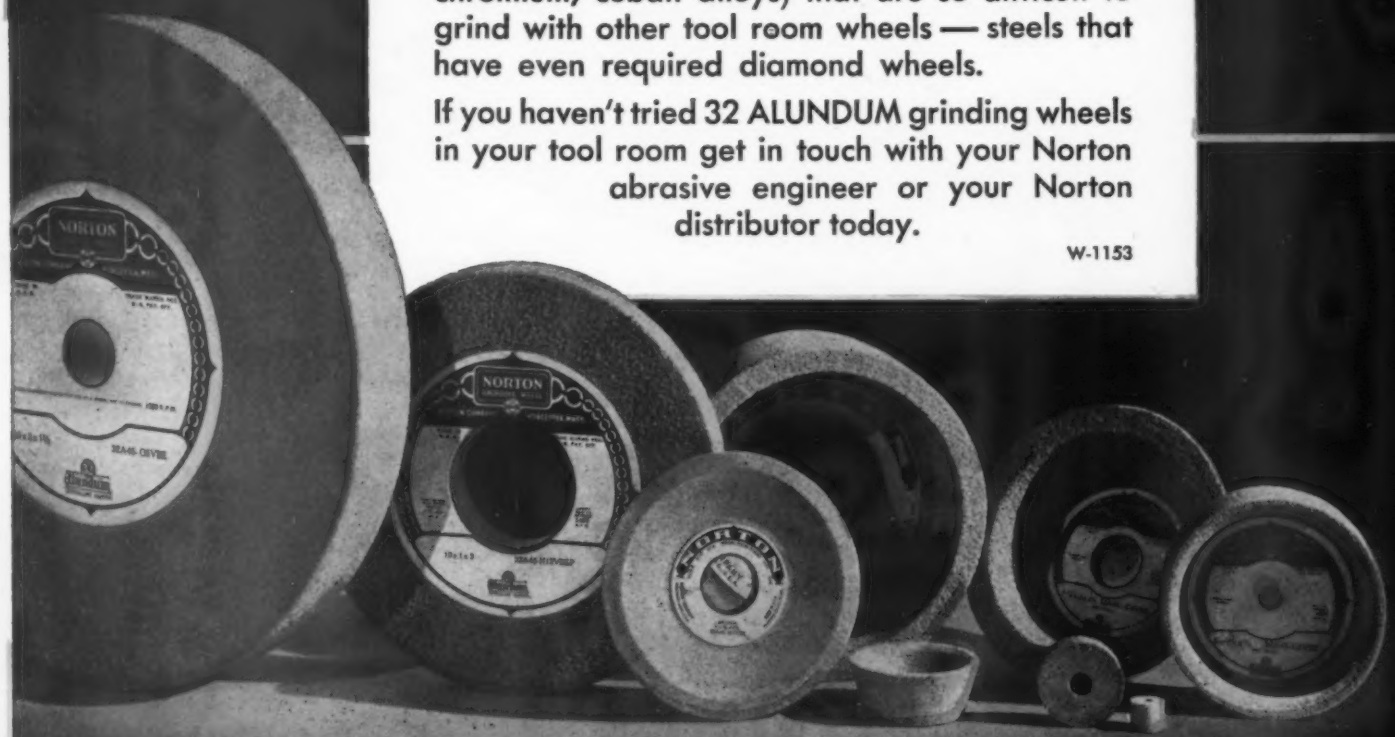
Fast Cutting . . . Cool Cutting
Few Dressings . . . Long Life

32 ALUNDUM abrasive gives you these four features in a far greater degree *than any other abrasive* — because it's made differently by a Norton-developed and patented process. Its unique single-crystal grains are *sharper* — they penetrate hard, tough high speed steels more easily — cut faster and cooler.

32 ALUNDUM wheels, for example, will grind the new "super" high speed steels (tungsten, chromium, cobalt alloys) that are so difficult to grind with other tool room wheels — steels that have even required diamond wheels.

If you haven't tried 32 ALUNDUM grinding wheels in your tool room get in touch with your Norton abrasive engineer or your Norton distributor today.

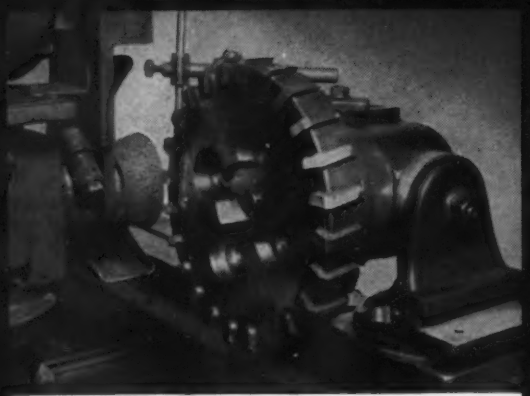
W-1153



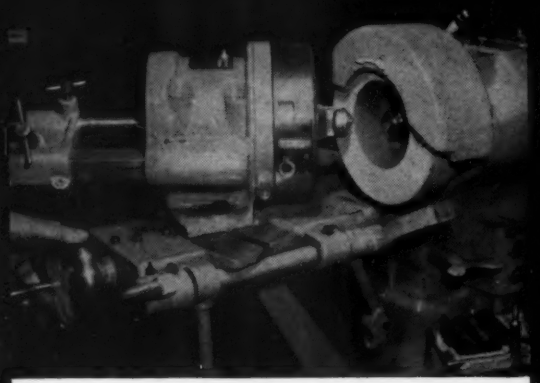
NORTON ABRASIVES

Abrasives - Grinding Wheels - Grinding and Lapping Machines - Refractories - Porous Mediums - Non-slip Floors - Norbide Products - Labeling Machines

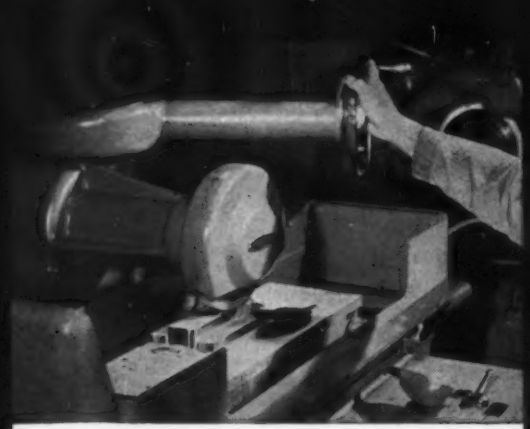
. Outstanding for TOOL ROOM GRINDING!



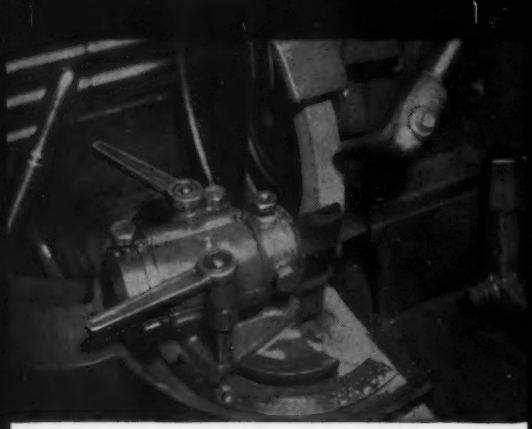
Because they stay sharp without frequent truing "32" wheels are ideal for multi-tooth cutters — will hold size all the way around without burning. Suggested specification: 32A46-K5VBE.



The cool cutting action of "32" prevents burning of sensitive H. S. S. drills and its versatility simplifies the grinding of a variety of sizes. Suggested specification for medium and large drills: 32A46-M5VBE.



"32" wheels give the extreme precision necessary for tool room surfacing jobs and they give it faster — with feeds several times greater than you've done before. Suggested specifications: 32A46-H8VBE or 32A60-F12VBEP.



You'll find "32" wheels the fastest cutting you've ever used for single point tools — whether you sharpen offhand or by machine. Suggested specifications: offhand 32A30-05VBE (roughing), 32A60-M5VBE (finishing); machine 32A36-L5VBE.

NORTON COMPANY, WORCESTER 6, MASS. *Distributors in All Principal Cities*

No worry about "weak links" when all piping is Crane

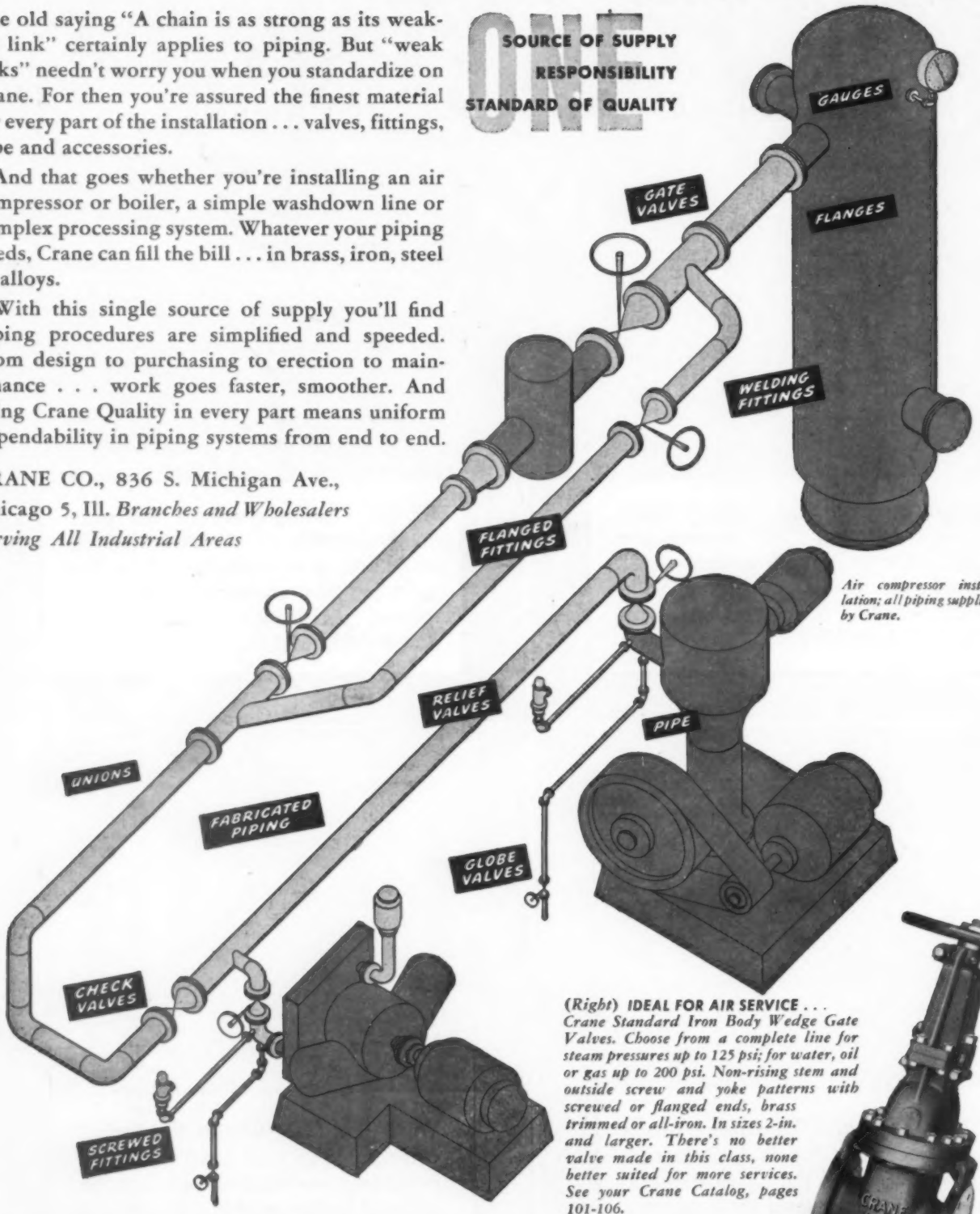
The old saying "A chain is as strong as its weakest link" certainly applies to piping. But "weak links" needn't worry you when you standardize on Crane. For then you're assured the finest material for every part of the installation . . . valves, fittings, pipe and accessories.

And that goes whether you're installing an air compressor or boiler, a simple washdown line or complex processing system. Whatever your piping needs, Crane can fill the bill . . . in brass, iron, steel or alloys.

With this single source of supply you'll find piping procedures are simplified and speeded. From design to purchasing to erection to maintenance . . . work goes faster, smoother. And using Crane Quality in every part means uniform dependability in piping systems from end to end.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill. *Branches and Wholesalers Serving All Industrial Areas*

ONE SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY



Air compressor installation; all piping supplied by Crane.

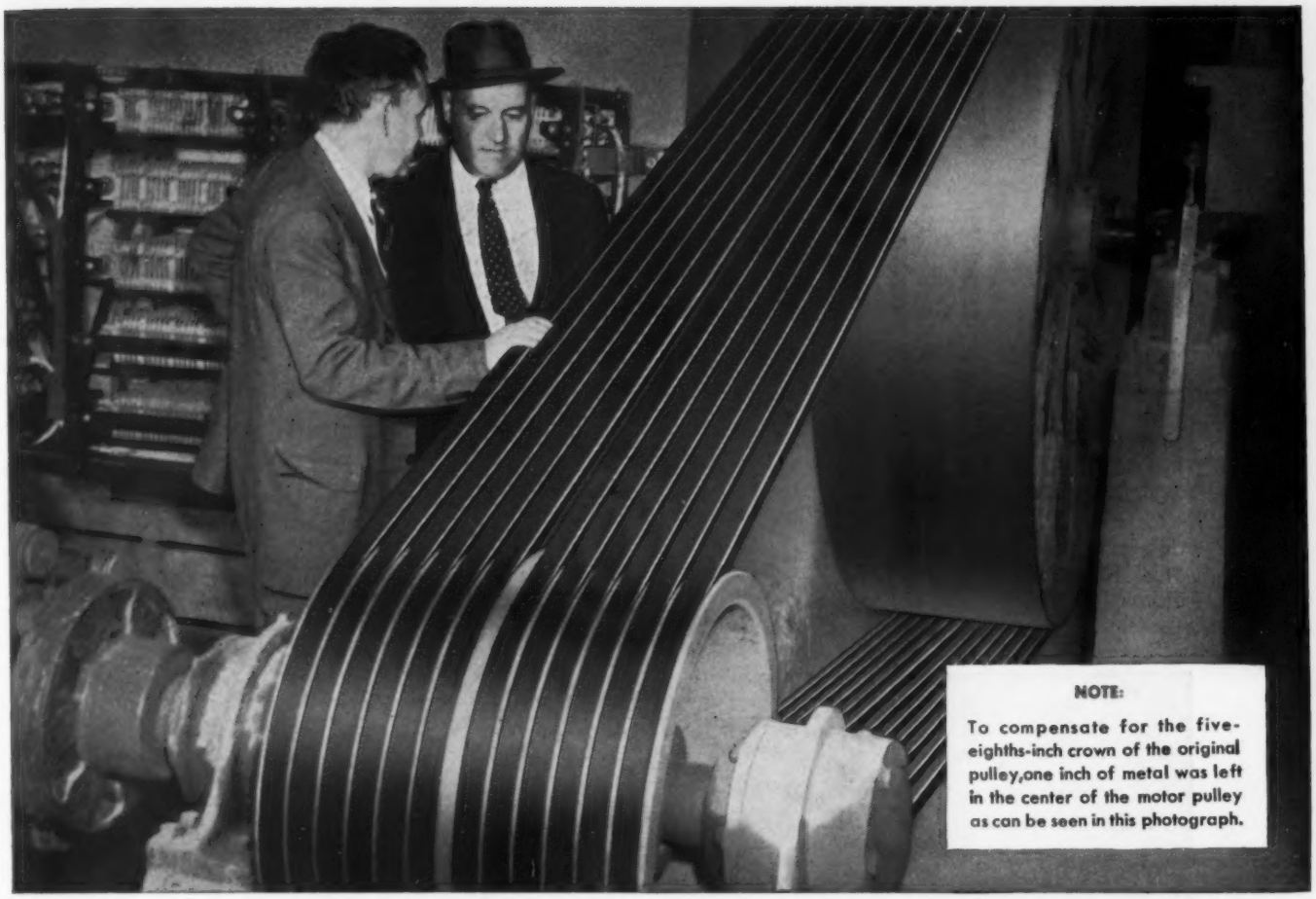
(*Right*) **IDEAL FOR AIR SERVICE . . .** *Crane Standard Iron Body Wedge Gate Valves. Choose from a complete line for steam pressures up to 125 psi; for water, oil or gas up to 200 psi. Non-rising stem and outside screw and yoke patterns with screwed or flanged ends, brass trimmed or all-iron. In sizes 2-in. and larger. There's no better valve made in this class, none better suited for more services. See your Crane Catalog, pages 101-106.*

EVERYTHING FROM . . .

VALVES . FITTINGS
PIPE . PLUMBING
AND HEATING

CRANE

FOR EVERY PIPING SYSTEM


NOTE:
To compensate for the five-eighths-inch crown of the original pulley, one inch of metal was left in the center of the motor pulley as can be seen in this photograph.

POWER PLANT EXPENSE REDUCED OVER $3,000 ANNUALLY

Boilers and machinery in the power plant of a large Central Ohio clay products manufacturer were badly in need of repairs. To replace worn-out equipment called for large capital expenditures and even with new equipment, estimated operating expenses loomed large. The manufacturer turned to his local Dayton V-Belt Distributor for suggestions. He recommended replacing the original prime mover with a 250-HP electric motor. This eliminated the necessity of replacing and operating the worn-out boilers. Further, though only 13 feet of floor space were available, the Distributor worked out a Dayton V-Belt short-center drive that made use of the original, flat, 8-foot-diameter pulley without removing the 5/8-inch crown.

In the first year of operation, the new motor and drive reduced power plant operating costs over $3,000!

Your own local Dayton V-Belt Distributor can give you similar help with your power transmission problems. With his specialized knowledge he can eliminate nearly 95 per cent of all power drive troubles using standard Dayton V-Belts and the power drive accessory equipment he stocks. If necessary, he can quickly secure the aid of a Dayton power transmission specialist. So, for prompt, profitable solutions to your drive problems call your local Dayton V-Belt Distributor.

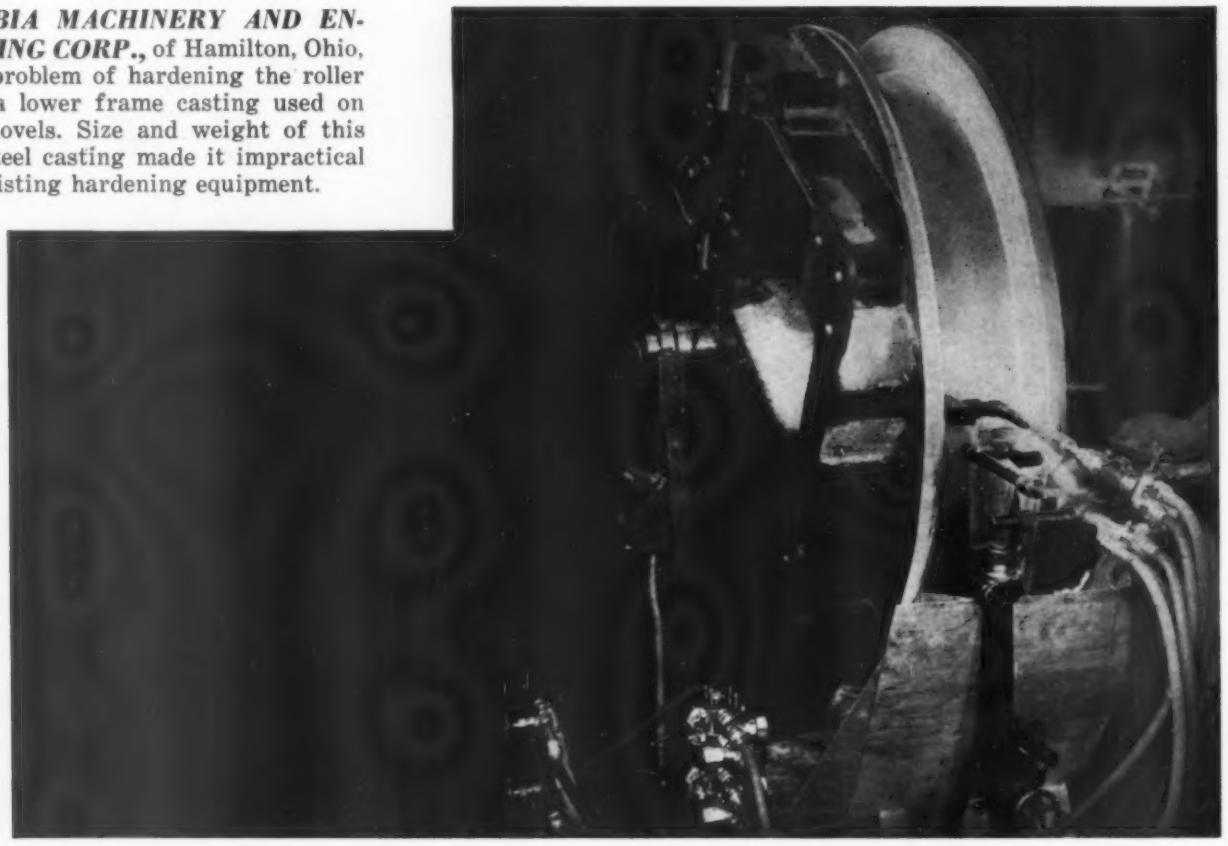
THE DAYTON RUBBER COMPANY
Main Office and Factory: Dayton 1, Ohio
Branch Offices: Atlanta, Boston, Chicago, Cleveland, Dallas, Detroit, Los Angeles, Minneapolis, New York, Philadelphia, St. Louis

V-Belt Buyers! A leading mill supply house near you offers specialized Dayton V-Belt service. Look for the name under the trade name heading "Dayton V-Belts" in the yellow pages of your telephone directory.

Dayton Rubber
THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

3400 pound steel casting flame hardened in 25 minutes

COLUMBIA MACHINERY AND ENGINEERING CORP., of Hamilton, Ohio, had the problem of hardening the roller pads of a lower frame casting used on power shovels. Size and weight of this special steel casting made it impractical to use existing hardening equipment.



D. P. CAREY, Airco Technical Sales Representative, suggested building a fixture for positioning and rotating the castings and for mounting the torches and accessory equipment. Using this special equipment, which rotates the 3400 pound casting at a speed of 7 inches per minute, the hardening cycle is accurately controlled and requires only 25 minutes. Two torches simultaneously flame harden both the upper and lower faces of the roller rings to a depth of 3/32 inches.

Thus, the hardening operation easily keeps pace with the rest of the shovel manufacturing and has more than proved entirely satisfactory.

TECHNICAL SALES SERVICE – ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

Technical Sales Service—though not a packaged commodity—is as readily available to all industry as any Airco process or product. If you have a metal working problem, ask to have a Technical Sales Division man call. Address Dept. 8419, Air Reduction, 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co., Houston 1, Texas. On West Coast: Air Reduction Pacific Company, San Francisco 4, California.

AIRCO **AIR REDUCTION**

Offices in All Principal Cities

Headquarters for Oxygen, Acetylene and other gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories

Hinged glass cover of this modern Wheeler Unit is readily opened for servicing lamps or starter switches by merely releasing toggle switches.

Skilled Lighting

DEVELOPED THIS ADVANCE-DESIGN DUST-TIGHT LIGHT FOR HAZARDOUS LOCATIONS

LET WHEELER "SKILLED LIGHTING" help you obtain proper plant illumination at the lowest overall cost. It applies 66 years of experience not only to the manufacture of industrial lighting fixtures but also to their application.

The dust-tight, fluorescent fixture shown above is a typical example of Wheeler *Skilled Lighting*. It is specifically designed for Class II-G and F, Class III and IV hazardous locations . . . completely sealed against dust and moisture . . . rugged and durable, yet its parts are readily accessible. Notice how wiring channel is held in position for servicing by safety-chain hangers. A uniformly-superior, porcelain finish covers its entire outer body, including closed ends.

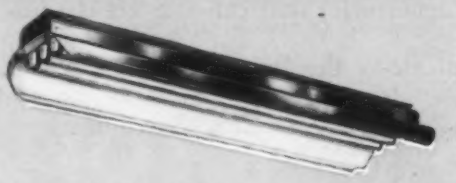
Wheeler's Series II Dust-Tight fixtures are Underwriter-approved. They are available for either two or three 40-watt lamps . . . glass cover of Water-White or Tempered-Clear-Safety Glass or Double-Thick Plain Glass.

Learn how you can profit by *Skilled Lighting* in every location throughout your plant. Write for Catalog. Wheeler Reflector Co., 275 Congress St., Boston 10, Mass., also New York, N. Y. Representatives in principal cities.

DISTRIBUTED EXCLUSIVELY THROUGH ELECTRICAL WHOLESALERS

RLM SOLID NECK INCANDESCENT REFLECTOR. Maximum lighting efficiency indoors or out. Expertly designed, ruggedly built. Vitreous enamel only. 75 to 1500 watts.

WHEELER VAPOLUX, dust-tight and vapor-proof fixtures, approved for Class II, Group G hazardous locations. Lamp totally enclosed in dust-tight chamber. Reflecting surface completely sealed from outside elements. 100 to 500 watts.



ALL-STEEL FLUORESCENT UNIT, for 2 or 3 40-watt, or 2 100-watt lamps. Available with open or closed end porcelain enameled reflectors. Broad wiring channel with accessible enclosed ballast. For individual or continuous runs.

Wheeler REFLECTORS

SKILLED LIGHTING

MADE BY SPECIALISTS IN LIGHTING SINCE 1881

REACHING for *Thor*

PORTABLE ELECTRIC

SCREWDRIVERS • NUT SETTERS

SUSPENSION BALANCERS

MORE AND MORE assembly lines on all types of production are reaching to Thor for assistance in tooling up their operations to offset labor costs.

Thor suspension balancers overhead . . . Thor power screwdrivers and nut setters all along the benches are *standard.* in the big industries—where a tool's value is carefully rated by its ability to stand up longer at top operating efficiency . . . where the manufacturer's engineering provides interchangeability of attachments and accessories that can convert the tool quickly to applications all along the line. Call in *experience* on your tooling problems—contact your Thor distributor!

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. Jackson Boulevard, Chicago 6, Illinois

Export Division: 330 West 42nd Street, New York 18, N. Y.

Birmingham	Boston	Buffalo	Cincinnati	Cleveland	Denver
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San Francisco	Toronto, Canada		Sao Paulo, Brazil		London, England

SPEEDS UP Assembly

...*Reduces Labor Costs!*

A typical scene along an assembly line tooled up with Thor portable electric screwdrivers and nut setters and Thor suspension balancers.

Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

good judgment

The performance of Harshaw chemicals will confirm your judgment in purchasing them. For more than 50 years the selection of Harshaw chemicals has proved to be the correct choice for thousands of buyers. • The Harshaw trademark symbolizes unvarying first-line quality. It assures you that the Harshaw laboratories are striving for perfection and continuously searching for new developments . . . and that control laboratories in each Harshaw plant guard carefully the quality of the products manufactured. • You will make a correct decision . . . exercise good judgment . . . and help yourself to progress . . . when you specify Harshaw chemicals.

THE HARSHAW CHEMICAL CO.
1945 East 97th Street, Cleveland 6, Ohio
BRANCHES IN PRINCIPAL CITIES

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BWH
DEPENDABLE RUGGEDNESS
This is the exclusive BWH ROTO-CURE Process of continuous vulcanization. It does away with the 30-foot overlaps occurring in the old-fashioned flat press curing, eliminates the possibility of operational weakness caused by such overcuring.
Cured Belt
Continuous Uniform Cure
Continuous Uniform Stretch

RECORD BWH BELT HAUL

Proof of the Advantages of the Exclusive BWH ROTOCURE Process of Continuous Vulcanization

Copper ore is jagged. Heavy loads, steadily biting and clawing at a conveyor belt, inflict the worst kind of punishment. So the operator of this big western mine, knowing the advantages of the exclusive BWH ROTOCURE Process of continuous vulcanization, specified a Bull Dog Belt for this job. His judgment was fully justified, for in 2,256 days of operation, 15,594 tons of ore were hauled every day!

Here's why belts made by the ROTOCURE Process are constantly making just such outstanding performance records:

1. ROTOCURE eliminates the press overlaps which occur every 30 feet in belts made in a flat press. And actual tests prove such overlaps may reduce flex-life as much as 40%.
2. ROTOCURE eliminates mechanical distortion, which occurs at press ends in flat-press curing.
3. ROTOCURE eliminates uneven stretch, because this process maintains constant, uniform stretch control during curing.
4. ROTOCURE eliminates overcure caused by press overlaps in rubber covers of conveyor belts. This makes them uniformly abrasion-resistant.

HAVE YOU A JOB WHERE STAMINA COUNTS?

Bring us your toughest problems — we're specialists in solving them. Consult your nearest BWH distributor or write us direct.

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all principal cities

PLANT: CAMBRIDGE, MASS., U. S. A. • P. O. BOX 1071, BOSTON 3, MASS.

...by insisting on AMERICAN PHILLIPS SCREWS

PRODUCTION-WISE – add sunlamp manufacturers to the host of stove, refrigerator, furniture and other modern-minded makers who are cutting production costs via American Phillips Screws. How? By straight, sure-fire, speedy, *automatic* driving that's proof against scars, scuffs, work spoilage. No matter what the pace, the 4-winged American Phillips Driver "stays put" — can't harm or hinder work or worker . . . and you can count on *time savings up to 50%!*

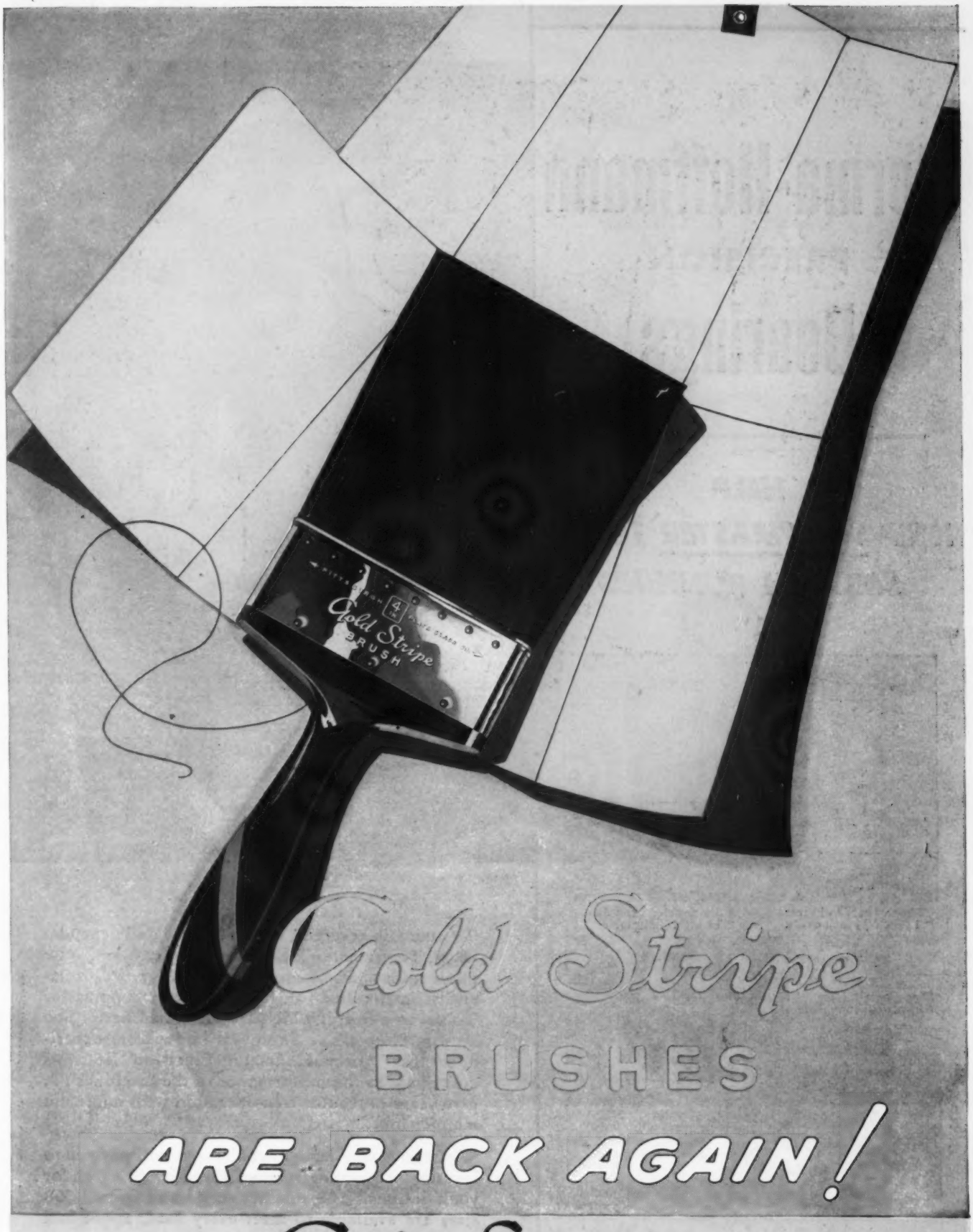
PROMOTION-WISE – American Phillips Screws lend a modern touch — step up the "sell" of whatever you make. They can't snag clothes but they *do* snag *orders!* Showmanship and serviceability both say "specify American Phillips."

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND

Chicago 11: 589 E. Illinois St. *Detroit 2:* 502 Stephenson Bldg.

AMERICAN PHILLIPS *Screws*

ALL TYPES
ALL METALS: Steel, Brass, Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)



Gold Stripe BRUSHES ARE BACK AGAIN!

Gold Stripe BRUSHES

PPG

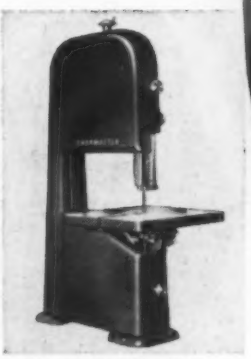
BRUSHES · PAINT · GLASS · CHEMICALS · PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Norma-Hoffmann
PRECISION
Bearings

HELP KEEP SHOPMASTER TOOLS SMOOTH RUNNING

Shopmaster Drill Press
12 inch ½ inch chuck



Shopmaster Band Saw
12 inch tilting table

Shopmaster Jointer
6 inch, extra long table

Shopmaster Bench Saw
8 inch tilting table

To maintain accuracy, rigidity, speed and dependability, **Shopmaster Inc., Minneapolis, Minn.,** employs *Norma-Hoffmann Precision Bearings* exclusively in its line of high quality "Shopmaster Tools" — a few of which are illustrated here. The reason, Shopmaster Engineers know from experience that Norma-Hoffmann Precision Bearings contribute to the performance of the machines . . . give years of trouble-free operation with minimum maintenance.

Whatever your bearing problems, it will pay you to investigate *Norma-Hoffmann Precision Bearings* for your designs. 108 distinct series and over 3,000 sizes are available to meet every load, speed and duty. Write for catalog.

NORMA-HOFFMANN BEARINGS CORPORATION
STAMFORD, CONNECTICUT

FIELD OFFICES: New York, Chicago, Cleveland, Detroit, Pittsburgh, Cincinnati, Los Angeles, San Francisco, Portland, Ore., Seattle, Phoenix

It grows on you!

Here's a switchboard designed so that it can *grow with you.*

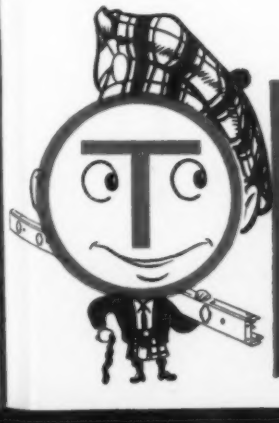
That's right. Trumbull switchboards may be expanded easily and economically to meet your electrical requirements. Standard panels of modular switching units permit flexibility in arrangement, ease of installation and expansion.

Trumbull Front-operated Interlocking (F.O.I.) Switchboard units are the culmination of 48 years experience in designing and manufacturing all kinds of electrical control equipment. They are of Class A fusible construction . . . built for low-cost operation and long life.

Equally flexible in arrangement are Trumbull Automatic Thermal Circuit Breakers (Type AT) for use in unit switchboard construction. Compact and safe, they assure continuous duty (service promptly restored after clearing harmful overloads).

Trumbull engineering "know-how" has combined the principles of unit construction and flexible arrangement to provide a coordinated switchboard assembly that can be tailored to fit your present and future electrical distribution needs.

For latest bulletins write to: THE TRUMBULL ELECTRIC MANUFACTURING CO., Plainville, Conn. Other factories and offices throughout the United States. Foreign representation.



FOR SAFETY'S SAKE—SAY "TRUMBULL"

TRUMBULL (T) ELECTRIC

Switchboards

Long ago ....buying valves was simply a question of "how many?"

Long ago, when valve making was in its infancy, all valves were pretty much alike. So no one worried about what *kind* of valves to buy. But because industrial flow control requirements were equally simple, almost everyone was fairly well satisfied.

But not everyone! Because Powell, not content to "let well enough alone," introduced the first regrinding globe valve in 1865 ... and ever since then Powell has been producing "firsts."

And so today, to satisfy the many diverse and complex flow control requirements of modern industry, Powell makes a Complete Line of valves—not only in Bronze, Iron, and Steel, but also in the widest range of corrosion-resistant metals and alloys ever used in making valves.

As a result, there's still no need to worry about what kind of valves to buy—merely consult Powell Engineering.

The Wm. Powell Co., Cincinnati 22, Ohio

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

Fig. 1793—Large 125-pound Iron Body Bronze Mounted Gate Valve. Made in sizes 2" to 30", incl. Has outside screw rising stem, bolted flanged yoke and taper wedge solid disc. Also available in All Iron.

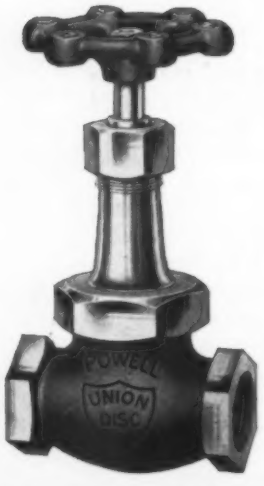


Fig. 150—150-pound Bronze Globe Valve with screwed ends, union bonnet and renewable composition disc.

Fig. 375 — 200-pound Bronze Gate Valve with screwed ends, inside screw rising stem, union bonnet and renewable, wear-resisting "Powellium" nickel-bronze disc.

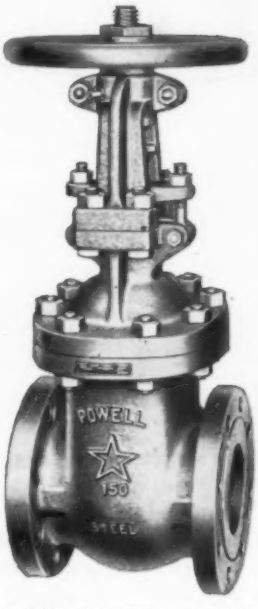


Fig. 1503—Class 150-pound Cast Steel Gate Valve with flanged ends, bolted flanged yoke, outside screw rising stem and taper wedge solid disc.

POWELL VALVES

Plastics where plastics belong

Because of a unique combination of chemical, electrical, and mechanical qualities, Synthane laminated plastics can be applied to an endless number of practical purposes. Moisture and corrosion resistant, light-weight and structurally strong, Synthane has many collective advantages not readily found in any other material. One of the best electrical insulators known, Synthane is hard, dense, durable . . . quickly and easily machined.

Among the interesting occupations of our type of technical plastics are the redraw bobbin and chuck (below) used in winding fine denier nylon for women's hosiery.

Fine nylon filaments can be wound without pulling and sticking because of the smoothness of the bobbin. Light weight of bobbin and chuck allows the spindle to be started and stopped faster and with less effort. Greater crushing strength of tube permits larger amounts of nylon to be wound. This is an appropriate job for Synthane, an interesting example of using plastics where plastics belong.

If any of Synthane's many properties suggest a use for it in your plant, let us help you before you design. Write for our complete catalog of Synthane plastics today! Synthane Corporation, 7 River Road, Oaks, Pa.

SYNTHANE

where Synthane belongs

DESIGN • MATERIALS • FABRICATION • SHEETS • RODS • TUBES
FABRICATED PARTS • MOLDED-MACERATED • MOLDED-LAMINATED

ON THE BALL OR BEHIND IT?

With industry clamoring for better products, businessmen are leaving no material unexplored which suggests a better answer to their current requirements.

Our type of laminated plastics—Synthane—may be your answer to better products because it has not one, but many valuable properties *in combination.*

As an electrical insulator, Synthane is one of the best—high dielectric strength, low power factor, low dielectric constant. May be quickly and easily machined.

For example, you can depend on Synthane for tensile, compressive, flexural and impact strength. Compares favorably with metals on a strength-for-weight basis.

Synthane is the set plastic, stable over wide variations in temperature.

Light weight is one of Synthane's most useful properties. Weighs about half as much as aluminum, has ample strength for all electrical and most mechanical applications.

Perhaps one of these or other Synthane qualities suggest its use in your product. If so, let us help you before you design . . . we may be able to save you considerable time, trouble and money. Send for your free copy of the Synthane Plastics Catalog today!

FOR MORE ANSWERS ON PLASTICS

SYNTHANE CORPORATION, 7 RIVER ROAD, OAKS, PA.

Gentlemen:

Please send me without obligation a complete catalog of Synthane technical plastics.

Name _____

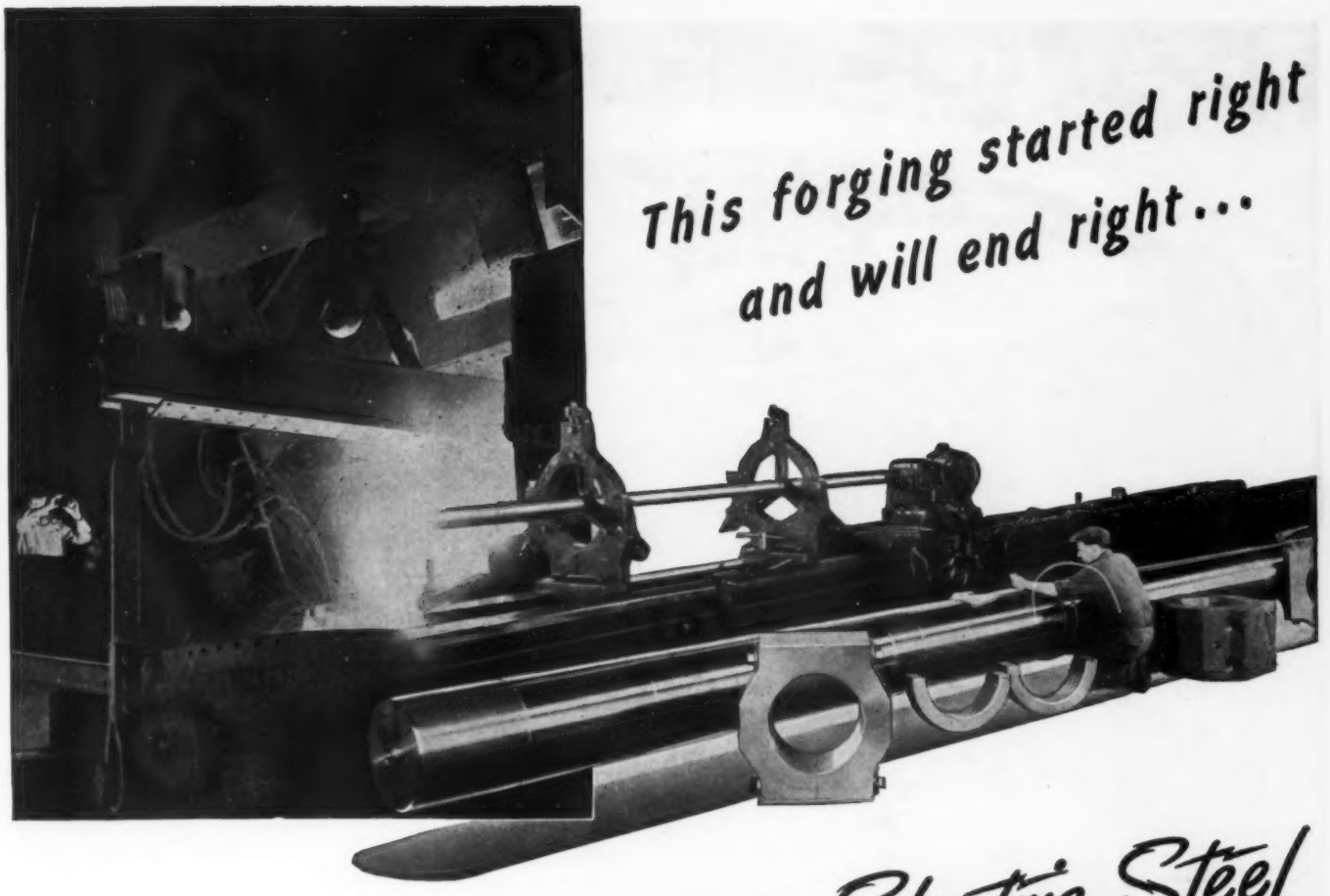
Company _____

Address _____

City _____ *Zone* _____ *State* _____

SYNTHANE

PLAN YOUR PRESENT AND FUTURE WITH SYNTHANE TECHNICAL PLASTICS • SHEETS • RODS • TUBES • FABRICATED PARTS • MOLDED-LAMINATED • MOLDED-MACERATED



This forging started right and will end right...

BECAUSE IT'S MADE WITH BASIC *Electric Steel*

● While the quality of the steel used is only one of many factors in producing exceptional steel forgings, it should be the first factor to consider in selecting your forging maker.

If your forging has a tough job to do, if it must stand up and give dependable performance over a long service life, if it must be capable of withstanding shock loads with high impact resistance, the character of the steel should be your primary consideration.

National Forge makes its own forging steel by the basic electric process—the process admitted to be superior for quality steel making. With the resultant finer grain structure and freedom from impurities, segregations and porosity, you can count on forgings with inherently greater strength.

Why not let us give you the technical reasons for specifying electric steel in your forgings . . . and also explain how the forgesmithing, heat treating and high precision finish machining are handled at National Forge. You'll buy better forgings if you let us place these facts in your hands.

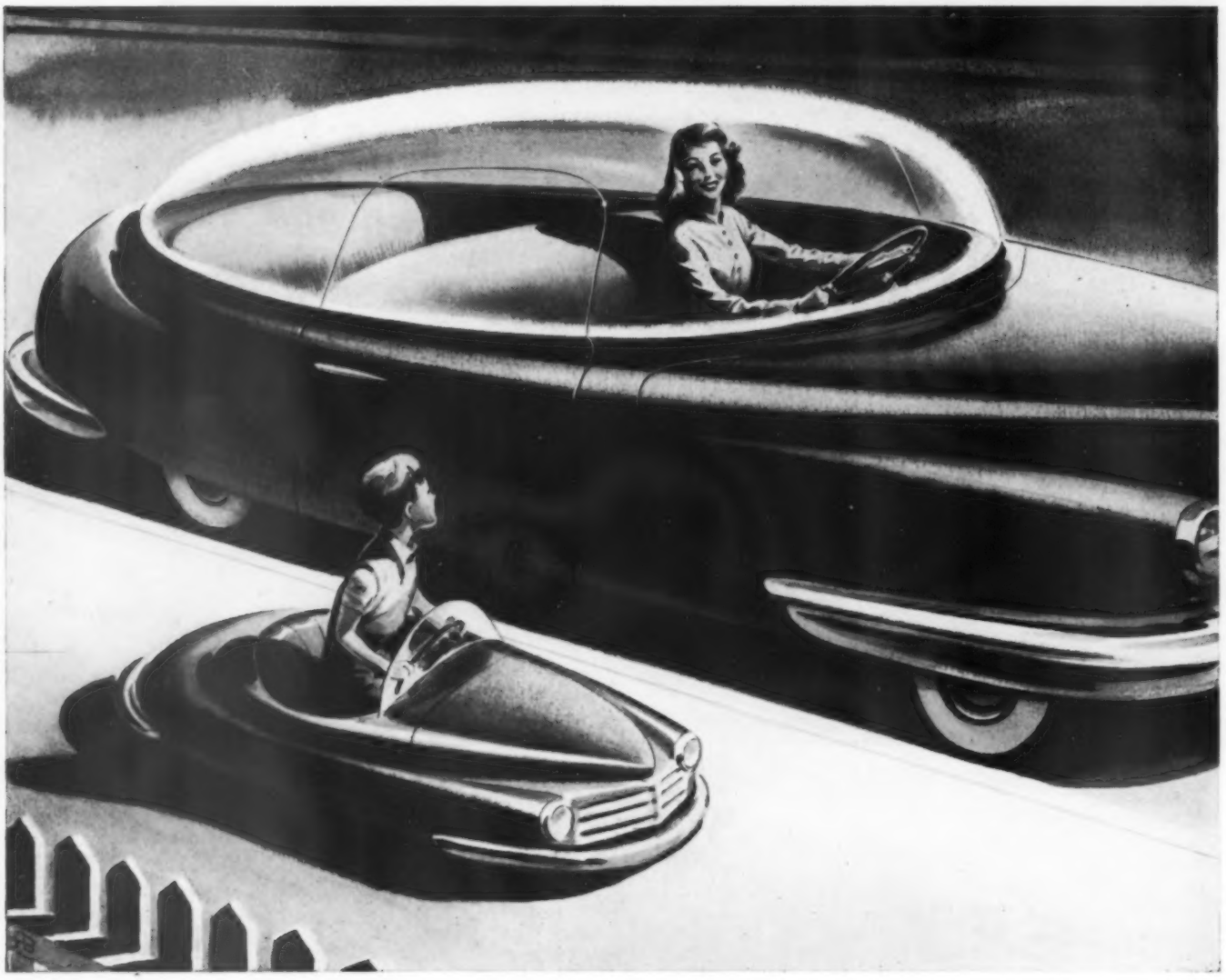
National Forge

AND ORDNANCE COMPANY

Irvine, Warren County, Pennsylvania

STEEL MAKERS ☆ FORGESMITHS

HEAT TREATERS ☆ MACHINISTS



Spongex gives both a smoother ride

FROM TOY auto tires to more than a dozen places in your own new car, *Spongex* sponge rubber is being used to make life smoother and easier for everyone.

In homes, offices and factories . . . in land, sea or air travel . . . wherever you go, whatever you do today, your path is made pleasanter by *Spongex* as an integral part of more and more widely varied products.

Spongex is used for seals on iron lungs and incubators; for weather strip and rug cushions; for typewriter key pads and refrigerator insulation — an infinite number of things, increasing almost daily.

Made by a company which has specialized for 25 years in the production of cellular rubber products, *Spongex* is an amazingly versatile material that is being used by leading manufacturers to solve problems of cushioning, sealing, insulating, gasketing, dust-proofing, shock absorption, and for sound and vibration elimination.

Give this unique material your serious consideration when planning improvements of your present products or developing new ones for future production. Samples available for experimental purposes. Sponge Rubber Products Co., 132 Derby Place, Shelton, Conn. Sales Offices in principal industrial centers.

Trade Marks Reg. U.S. Pat. Off.

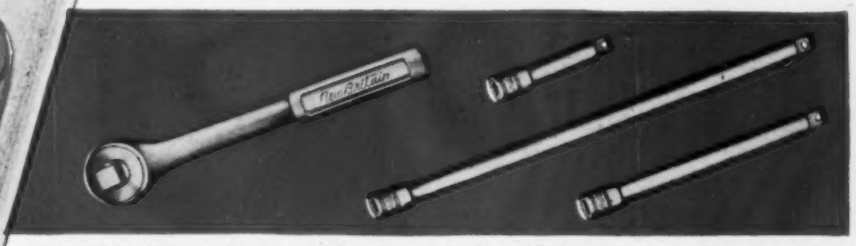
SPONGE RUBBER PRODUCTS CO.

SPONGEX • CELL-TITE • TEXFOAM • TEXLITE • TEXLOCK

New Britain

remembers the tools you might forget!

These special tools are turned out by New Britain with the same care and skill lavished on the more familiar items in this famous line. Their presence in the well-rounded tool collection spells the difference between a job done—and a job done with real e-a-s-e! Make them part of your equipment...TODAY! The New Britain Machine Co., New Britain, Conn.

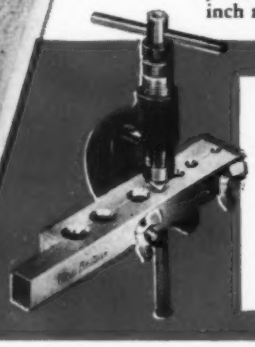


RATCHET—The mechanic's good right arm...made by New Britain in bulk-reducing Oval Design. Smaller head reaches right to the heart of the work! This Ratchet engages two pawls instead of the usual one for double power! Reverses with simple twist of plastic knob. 3/4", 1/2", 3/8" and 1/4" drives.

EXTENSIONS—Made in the New Britain tradition of Greater Strength—Better Fit, these auxiliary Drive Parts add long-armed dexterity to many a Tool combination. For reach and turning in hard-to-get-at places. Available in 3/4", 1/2" and 3/8" drives.

IGNITION PLIERS—A Mighty Midget in grip and usefulness. Exclusive New Britain design insures a solid hold on the smallest nuts, while five-inch length is just right for getting close to awkward ignition jobs. Has three adjustments with a half-inch range.

FLEX SOCKETS—These handy 3/8" Drive Sockets are made by New Britain with those around-the-corner, out-of-the-way jobs in mind. Tough universal joint. Seven standard size openings.



FLARING TOOL—Carefully designed by New Britain for fast, accurate work. An amazingly compact Flaring Tool, made to take 7 sizes of tubing! . . . 1/8", 3/16", 1/4", 5/16", 3/8", 7/16", 1/2".

SQUARE SHANK SCREW DRIVER—Call on this big fellow for all the turning pressure that's needed. The big, tool steel blade will never turn in its amber handle. And the square shape permits the use of a wrench or pliers for extra leverage!

New Britain

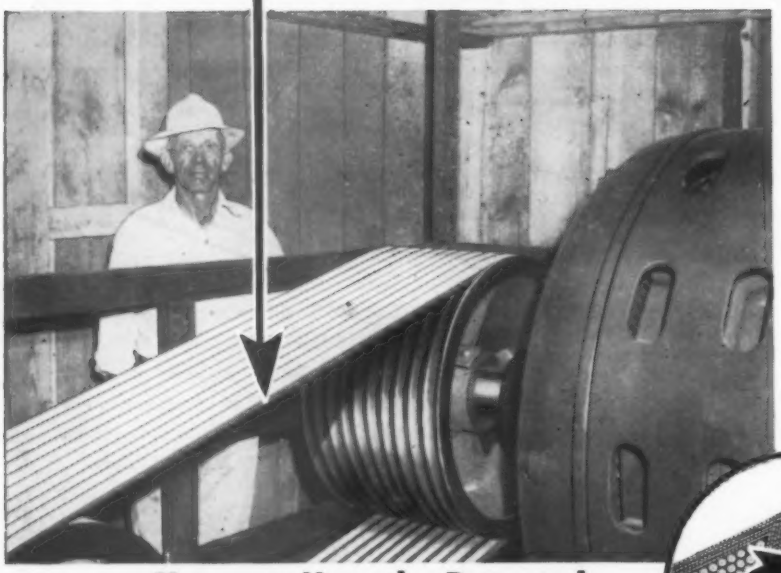
The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

GREATER STRENGTH • BETTER FIT • HAND TOOLS

The SIDES of a V-Belt . . .

Diagram of V-Belt in Sheave Groove

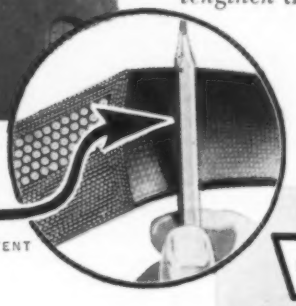
Really DRIVE the Pulley
They PICK UP and DELIVER the POWER!
Naturally They GET the WEAR



Anyone experienced with V-Belt drives knows that the *sides* of a V-Belt are what really get the wear.

It's the *sides* that grip the pulley. They pick up all the power from the driver pulley, transmit that power to the belt as a whole and then, once more, deliver the power to the driven pulley. Moreover, it's the sides that take all the wear against the sheave-groove wall.

That is why you have always noticed that the *sidewall* of a V-Belt is the part that *wears out first*—and, naturally, if you prolong the life of the sidewall, you *lengthen* the *life* of the *belt!*



Now see How the Patented Concave Side

A GATES PATENT

SAVES Sidewall Wear ...Lengthens Belt Life

The simple diagrams on the right show exactly why the ordinary, straight-sided V-Belt gets excessive wear along the *middle* of the sides. The diagrams show also why the Patented Concave Side greatly *lengthens the life* of the *sidewalls* of Gates Vulco Ropes. That is the simple reason why your Gates Vulco Ropes are giving you so much longer service than any straight-sided V-Belt can possibly give.

Saving SIDEWALL WEAR is more important NOW than ever before.

Now that Gates *SPECIALIZED* Research has resulted in Super Vulco Ropes capable of carrying much heavier loads—fully 40% higher horsepower ratings—the sidewall of the belt is called upon to do even more work in transmitting these heavier loads to the pulley. Naturally, with heavier loading on the sidewall, the life-prolonging Concave Side is more important now than ever before!

Straight Sided V-Belt

How Straight Sided V-Belt Bulges When Bending Around Its Pulley

You can actually feel the bulging of a straight-sided V-Belt by holding the sides between your finger and thumb and then bending the belt. Naturally, this bulging produces excessive wear along the middle of the sidewall as indicated by arrows.

Gates V-Belt with Patented Concave Sidewall

Showing How Concave Side of Gates V-Belt Straightens to Make Perfect Fit in Sheave Groove When Belt Is Bending Over Pulley.

No bulging against the sides of the sheave groove means that sidewall wear is evenly distributed over the full width of the sidewall—and that means much longer life for the belt!

THE GATES RUBBER COMPANY *"The World's Largest Makers of V-Belts"* DENVER, U.S.A. 484

Gates

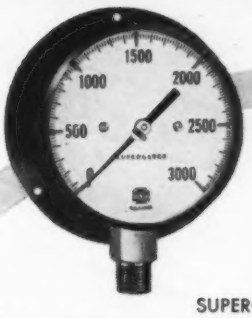
The Mark of SPECIALIZED Research

GATES VULCO ROPE DRIVES

Engineering Offices and Jobber Stocks **IN ALL INDUSTRIAL CENTERS** of the U. S. and 71 Foreign Countries

USG HELPS YOU SELECT GAUGES

From the World's Largest Family of Instruments

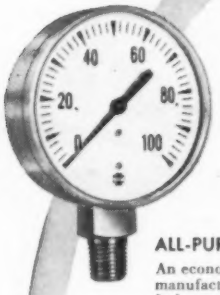


SUPERGAUGE

An instrument of test gauge accuracy, designed for many years of service in heavy-duty industrial installations. Withstands excessive vibration and pulsation and provides a safe positive check on process control.

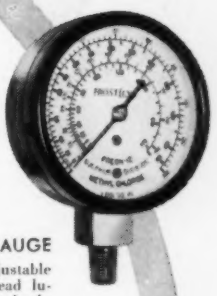
ULTRAGAUGE

A superior quality gauge of top-most accuracy and durability, designed especially for chemical and oil refinery applications. Furnished in 4½", 6", 8½", 12" and 16" dial sizes . . . from vacuum up to 100,000 pounds per square inch pressures.



ALL-PURPOSE PRESSURE GAUGE

An economically priced pressure gauge manufactured to commercial accuracy. It has a phosphor bronze bourdon tube and a corrosion-resistant movement. It's smart in appearance and dependable in performance.



REFRIGERATION GAUGE

Important features include: adjustable hub pointer, broad easy-to-read luminous dial, removable screw check. Low side gauge has 1" and 1 lb. graduation and is protected to 200 lbs. overpressure. Also available with external calibrator and retarded movement.

U.S. INSTRUMENTS Tell The Truth

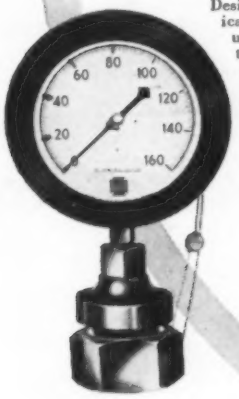
6 out of 10 Manufacturers Buy US Gauges

USG

CHEMICAL GAUGE

Clean-Out Type

Designed for service in chemical and processing plants for use on heavy viscous fluids that tend to clog. Supplied with precious metal diaphragms and assemblies for highly corrosive chemical application. Diaphragm is easily removed for cleaning.



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That's the idea . . . grab – place – drive . . . grab – place – drive . . . Becomes automatic, doesn't it! If the screws are *uniform* – all regular – you grab a good one every time and the work swings along.

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Uniform CORBIN *Screws...a good one every time*

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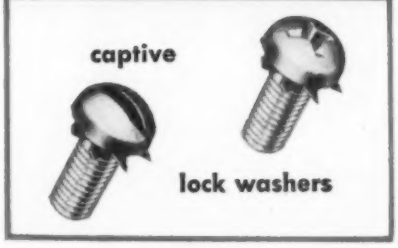
Come to CORBIN for CORBIN-PHILLIPS, CORBIN SLOTTED, CORBIN SEMS. They're *uniform.* S-81

CORBIN SLOTTED SCREWS

CORBIN SEMS



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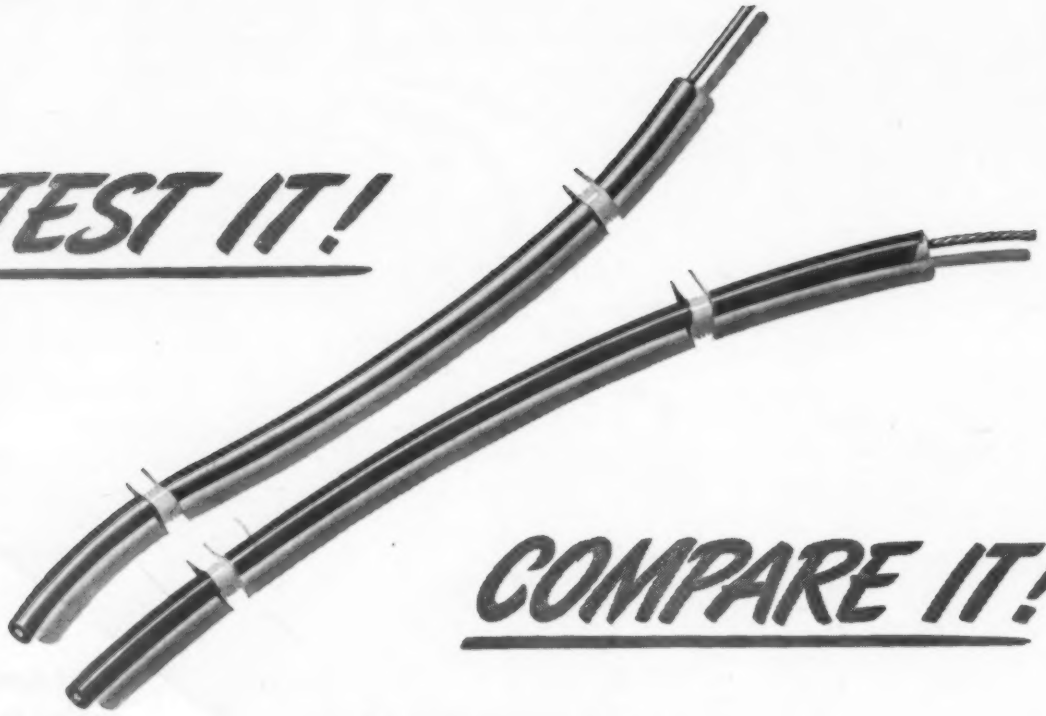

COMPARE IT!

and you'll see why

FEDERAL'S *Intelin* TYPE "TW" BUILDING WIRE CAN:

HERE'S a building wire that invites comparison.

Twist it, flex it, wrap it several times around its own diameter. It will *not crack*.

Try to burn it. It will *not* support combustion—will *not* become sticky or flow along the conductor.

Federal's Intelin Type "TW" Building Wire is designed, manufactured, quality-controlled, and tested to meet and exceed the most exacting building requirements—not only *when* it is installed, but for *years to come*. Its outstanding properties recommend it as the logical choice of Contractors and Maintenance Men, Architects and Engineers, Building Owners and Inspectors. It is available, with either solid or stranded conductors, in a wide range of sizes, for 0–600 volt service. It can be supplied in standard colors which go all the way through the insulation—can't wear away or be scraped off.

Send for free samples—see for yourself what Federal's Type "TW" Building Wire can do to make your wiring job easier, faster, and more economical in the long run. Write Federal today. Dept. D334.

1. SPEED UP INSTALLATION

—because it's free-stripping, leaves copper clean for splicing, and pulls through ducts easily, without binding and jamming.

2. INCREASE DUCT CAPACITY

—because its smaller diameters permit *more* conductors in a given duct, for rewiring—or *smaller* ducts for a given conductor capacity, on new installations.

3. LAST LONGER ON THE JOB

—because its one-piece extruded plastic insulation resists heat, cold, oxidation, gasoline, greases, acids, chemical fumes, moisture and abrasion.

**Reg. U.S. Pat Off.*

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Reduce Wear ... by providing extremely hard working surfaces —without sacrifice of strength or toughness

Republic Alloy Steels offer many advantages—and one of the most important is *uniform* HARDENABILITY. These fine steels can be surface or deep hardened to *predetermined* values with full assurance of the results. Furthermore, the wearing surfaces produced are free from non-hardened or soft areas.

Such response to hardening treatment—plus retention of full strength and toughness—mean (1) less wear, (2) longer life and (3) lower cost for vital working parts when made of Republic Alloy Steels.

Republic—world leader in alloy steel-making—is well qualified to help you in selecting the most efficient alloy analysis for each use—and in fabricating and processing it to obtain best results. Write us.

Anti-friction bearings are good examples of how Republic Alloy Steels can be surface hardened to resist wear—without any sacrifice of internal strength needed to withstand tremendous strain. Republic metallurgists have contributed much to the efficiency and economy of better bearings. And they are ready to work with you and your engineers toward improving your product.

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General Offices, Cleveland 1, Ohio • Export Department: Chrysler Building, New York 17, N. Y.

Republic REPUBLIC STEEL REG. U. S. PAT. OFF. **ALLOY STEELS**

Other Republic Products include Carbon and Stainless Steels—Sheets, Strip, Plates, Pipe, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

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FOR FACTORY WORKERS
SAFETY
FOR CONSTRUCTION MEN
SAFETY
FOR CHEMICAL WORKERS

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CESCO products

Face Shield

Spectacle-Type Goggle

Cup-Type Goggle

Protective Clothing

Air-Fed Helmet

Respirators

6 out of 150 Cesco products are shown above. They represent what CESCO can do to protect your workers, no matter what your needs may be. For quality safety equipment, check CESCO every time.

CHICAGO EYE SHIELD COMPANY
2320 Warren Boulevard
Chicago 12, Illinois

CESCO
FOR SAFETY

F.O.B. filosofy of buying

DEFLATION is here. A grade school principal testified last month that questions asked at a Lackawanna (N. Y.) Civil Service Commission examination for the position of City Purchasing Agent were identical with those given in an arithmetic quiz to his sixth grade pupils. The one concession to vocational implications was that one problem dealing with delivery of a ton of coal had been rephrased to read: "delivered to the City Hall." The brighter side of this picture is that the testimony was presented in the course of an inquiry into the affairs of the Lackawanna Commission, ordered by the State, and that the jobs of six recent appointees under such examinations are at stake, while the Commissioners themselves are indicted on charges of conspiracy and violation of the State Civil Service Act. Somebody higher up did not agree that effective purchasing can be rated at the sixth grade level.

• •

IT is evident from this quiz that a City Purchasing Agent is not necessarily a C.P.A.

• •

OTHER typical questions, in case you want to bone up for an examination, were reported as follows:

"True or false? (a) Small size rubber bands may be bought by the pound. (b) Braid and brands, as applied to storeroom articles, mean the same thing. (c) A written or printed contract of insurance is known as a premium.

"Did the Community Chest campaign in Lackawanna go over the top, and who was its chairman?

"What Congressional District do you reside in?"

• •

STATE Purchasing Agent Lacy Wilkinson of Colorado was up against a mysterious problem when a long delayed voucher arrived from Fort Lewis School for half a bull, price $350. The voucher was dated November, 1946, and there was no record of where the bull was or who owned the other half. A witness to the transaction finally turned up in the person of Rep. W. A. Carlson, of Greeley, who recalled that the Fort Lewis School and Colorado A. & M. College got together for the purchase of a half interest each in the animal. A. & M. paid for its half, but the Fort Lewis voucher got lost in the shuffle. So it turned out to be a whole bull, after all, and the state owns all of it—or will as soon as the voucher is cleared.

• •

THE February issue of *The Kelloggram*, house organ of The M. W. Kellogg Company, New York, is devoted to the role of the purchasing department in this nationwide engineer-contracting organization. Says the foreword: "Few realize the diversity of problems in one refinery installation . . . take purchasing for example. Seldom discussed, little known—yet it's a major item in final cost and efficiency of the unit." The Kellogg purchasing department writes about 75,000 purchase orders a year, and every one of these items must be delivered at the project location to conform with construction time-tables. Small wonder that the report states: "In its concept of modern engineering and construction, Kellogg rates purchasing as one of the more important branches of its service." Edward H. Hanhausen, Director of Purchases, has literally grown up with the purchasing department. He joined the company in 1916 as a time keeper, studied advanced metallurgy in his spare time, became a buyer in 1926, and has headed the department since 1934. At the peak of wartime activity, his department was purchasing at the rate of close to three million dollars a week.

• •

THE editor of *American Shoemaking* (December) likewise pays tribute to the Purchasing Agent, but tempers his tribute with some

friendly — and elementary — advice. "The purchasing agent is a key stone in the shoe factory's organization," he starts off. "It is hard to see how the factory could function without him. But the thing that this buyer should constantly carry in mind is the fact that price is not always the dominant factor. . . Briefly put, the purchasing agent simply cannot afford to have only one target to shoot at—price alone. He must remember that it could be that price is the least important factor connected with the purchases he makes."

• •

AND the Grand Rapids *Herald* (February 1), carries a feature story entitled, "There's a New Key Man in Industry." You've guessed it: the new key man is none other than the P. A. "The general manager smiles his brightest smile and the other 'big brass' speaks softly these days to the purchasing agent of your average manufacturing concern," the article reports. "All and sundry regard him with deference because in many a plant his efforts decide whether the business keeps running." Six P.A. portraits adorn the page, headed by R. R. McKeon, President of the Grand Rapids Association, and the inquiring reporter presents a brief interview with each. Here's how one purchasing office impressed the lay observer:

"At the plant of Doehler-Jarvis Corporation, the purchasing agent, John Witkowski, gave the appearance of a newspaper city editor with a murder story breaking. His desk was a mass of letters, charts and memoranda, and he was stripped down to his vest, a black cigar in one hand and the telephone in the other."

Buyer Witkowski's "interview was in character: "Too busy now. Come back later."

• •

AMID the pleasant warmth of all these kind words, Art Hopcraft of Cleveland, who has been in purchasing long enough to view the situation without any illusions, tells a conference of the American Management Association that it's all a matter of cycles. When we get around to the point when there are ten eager salesmen looking for every order, and nine of them are doomed to disappointment, the detractors will again become vocal. "Like the locusts, who also live by cycle and lie dormant for a six-year period, the plague will be upon us again—the certain and natural sign of unsuccessful and disappointed sales effort."

"SILVER-CLAD"

THE COST SAVING, VERSATILE LAMINATED METAL

Save on costs, gain in performance with silver-clad base metals which offer a diversity of operating characteristics.

FOR ELECTRICAL APPLICATIONS

A part made from silver laminated to a base metal makes an ideal electrical contact. The essential electrical properties of the silver alloy are obtained at minimum cost. At the same time, the most advantageous characteristics of the desired base metal can be utilized. Many engineers feel the most important feature of silver-clad is the absence of a mechanical bond between silver and base metal. Typical examples of the advantage of silver-clad material are found in parts made from silver on phosphor bronze or nickel silver where spring temper is required in the blade, this spring to be obtained by work hardening. We can supply these laminated metals in any temper. For special uses, silver or beryllium copper may be formed soft, then hardened to maximum strength and spring temper. For rugged construction, where heavy loads are carried, silver on pure copper is generally considered most desirable.

FOR CHEMICAL APPLICATIONS

Silver-clad metal is non-corrosive and resistant to organic acids. For food processing equipment and general chemical usage, we have developed new tubing. It may be silver-clad on the inside, or outside, or both, in lengths up to 20 feet, and diameters up to 1 1/2 inches. If demand warrants, diameters of 2 or more inches could be made. The precious metal ratio is closely controlled, the silver surface is hard and free from porosity, and it is economical.

Any alloy of silver will be furnished upon request. Your further investigation is invited. Our chemists, metallurgists, and sales engineers are at your service.

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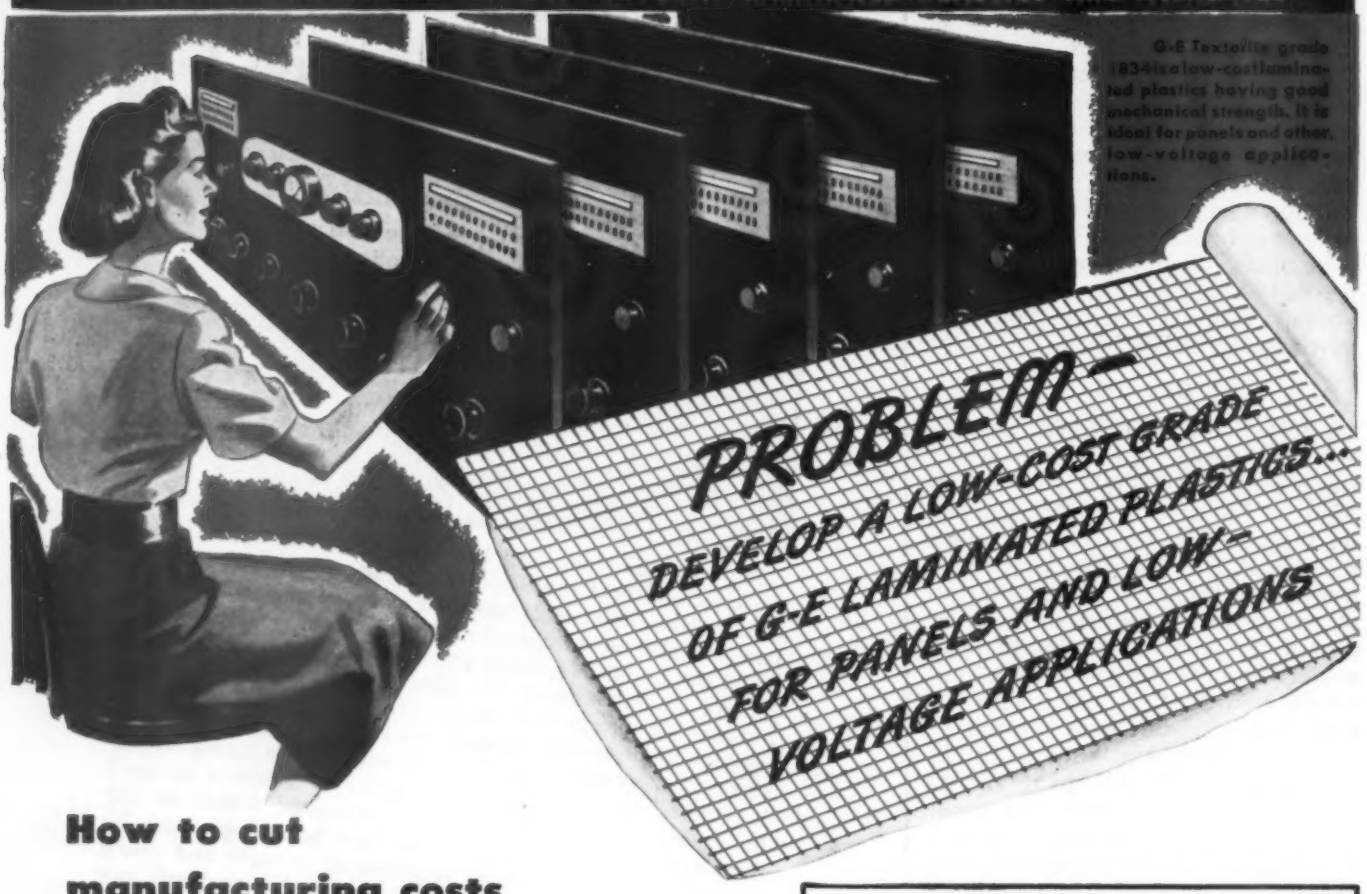
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How to cut manufacturing costs

Perhaps your manufacturing costs can be lowered by utilizing G-E Textolite 1834. This low-cost grade of laminated plastics may do your job just as well or maybe even better than more expensive materials you are now using.

And if grade 1834 doesn't meet your requirements, just remember that there are more than fifty other grades of G-E Textolite available. Each of these grades has an INDIVIDUAL COMBINATION of properties. None are exactly alike.

Why not investigate the varied grades of Textolite and the five forms in which it is produced. You'll profit. Plastics Division, Chemical Department, General Electric Company, One Plastics Avenue, Pittsfield, Mass.

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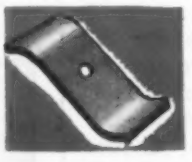
LOW-PRESSURE MOLDED PARTS — Extremely large and irregular Textolite shapes are custom molded by the low-pressure laminating process.



POST-FORMED LAMINATES—Sheets of Textolite laminated plastics are custom formed into simple shapes by this very inexpensive method.

Purchasing Previews

A Washington Report . . . . . for Purchasing Agents

April 1, 1948

LONG-TERM OUTLOOK OPTIMISTIC . . . .

Day-to-day trend is alarmist, with observers watching every crack in the price and business structure to discover whether the crack will widen, whether it is seasonal, or a mild adjustment phenomenon.

Over longer haul---and this is in terms of months, the next six months---the outlook appears more solid.

Employment prospects are for continued record high levels. The spring planting will mean a sudden swelling of farm labor demand, and construction labor requirements will increase simultaneously as the construction season begins.

This will serve to diminish pessimism over sustained demand.

ERP SEEN AS HALTERING EXPANSION . . . .

Key factor in future demand will be the European Recovery Program. Approval of the program is assumed certain; main decision is the extent of shipments.

European aid on extensive scale will introduce a situation somewhat parallel to that in 1940, when Government became a claimant to the first materials and equipment. From that first flow blossomed the gigantic Lend-Lease program.

Difference is that when the National Defense Advisory Commission initiated the first priority steps, the general economy was at a low point, and there were no domestic claimants whose production would be slowed by export of materials.

Now, some industries see the European export as a direct threat to the further expansion of their output.

Major opposition to the voluntary industry agreements program comes from industries whose expansion plans would be curtailed by any direction of steel into the four "must' programs ---farm machinery, railroad cars, oil distribution equipment, and housing.

To date, opponents of the program have been battling against a straw man. Until the export program gets under way physically, there will be little indent on domestic production.

In fact, a sudden collapse of the European program would be a graver threat to domestic producers, as this would reflect quickly in the economic picture.

INDUSTRY'S INVENTORY POSITION HEALTHY . . . .

Inventory picture continues sound, in that there has been little speculation in inventories. Period of heavy accumulation was 1946 when, according to the Department of Commerce, inventories increased by $3.9 billion.

Owing to this heavy physical accumulation, the major phase in the postwar restocking movement had been com-

pleted by the early months of 1947, and the rate of accumulation was reduced in successive quarters of last year.

On the basis of current sales volume, inventory position on an overall basis is still lower than would be justified by the ratio between inventory and sales in normal periods.

Surmise is that manufacturers are more wary---also that there is a general trend toward a shorter inventory position, facilitated in great part by greater flexibility in procurement.

NO HEAVY LIQUIDATION IN FINISHED GOODS . . . .

Raw material and semi-processed goods inventory position is reflected in finished goods. While some small gluts have appeared in retail lines on a temporary basis, this has been a matter for adjustment---rather than heavy liquidation.

Type of adjustment which has taken place is where certain lines of household goods have come into good supply. Significant factor is that in most industries, while some items have come into a supply and demand balance, other items in the same industry are far short of demand.

It is further significant that at no point in the trade is an inventory of higher-priced lines being accumulated. These are being moved out to the consumer quickly, and adjustments in supply have been made in quick reaction to changes in demand. Result has been that there has been no distressed merchandise.

PRICE PATTERN AFTER WORLD WAR 1—AND NOW . . . .

Price trend continues to be the focal point of alarm. Following World War 1, there was a sharp inflation——followed by a sharp deflation, and then a long period of stable prices.

There is general recognition that new factors have been introduced by the virtual elimination of two competitors in world trade——Germany and Japan, and the diminution of a third, Great Britain.

Net result has been that in such items as dinner-ware, the prewar market in cheap lines was monopolized by Japan, and the fine lines were monopolized by Britain and France——while U.S. producers were hard put to get their share of the medium-price line market. Currently, U.S. producers have the entire domestic market to themselves, plus an export demand.

This means that as far as price competition is concerned, U.S. producers now contend among themselves, and supply is running behind demand.

Break in farm commodity prices in the early 1920's was blamed for the general price break immediately after the World War 1 inflation. Now, it is believed that crop prices can be stabilized at a high level, even though the shortage situation in food is overcome.

The question still remains as to when the leveling off period in prices will begin, and where the level will be.

CONSTRUCTION INDUSTRY IS BELLWETHER . . . .

Construction industry will be significant indicator of trend this year. This industry is at dead center during the winter months, with most activity concentrated in finishing off construction started in the previous summer and fall.

Strong emphasis on housing has dominated field for last two years. This year, construction of housing may level off. During some of the closing months of the building season last year, rate of housing construction exceeded the all-time boom year of 1925.

Question now is whether this year will be the year for housing construction, or whether prices have dried up some of the demand.

If latter trend starts to develop, strong emphasis will be laid on a public housing program, and big spurt will occur in public construction. Need for school construction alone is estimated to range in value between $10 and $13 billion.

Silverstitcher Cuts Carton Closing Time in Half

Read how mushroom packer uses Acme Silverstitcher to save on materials and labor . . . doubles production . . . makes a stronger carton unaffected by dampness

"Show us!" said the world's largest growers and canners of mushrooms.

An Acme Shipping Specialist had analyzed the packing operations of this company and advised an Acme Silverstitcher with Silverstitch wire for stitching the bottoms of shipping cartons. For years a fairly good carton had been sealed with glue. Nevertheless, an Acme Silverstitcher was installed in the shipping department and a trial was made.

Here is what this company wrote . . .

"...results were a surprise to us..."

"First, we found a saving in material and labor of approximately 30%. Second, we can stitch 100 cartons now in the same time it took to glue 50. Third, the staples give us a stronger carton unaffected by dampness. And fourth, our operators prefer the stitching to the old method of gluing. We recently installed another Acme Silverstitcher in our Hudson, N. Y., plant and the results are just as pleasing."

Significant savings like these are worth inquiring about. Ask an Acme Shipping Specialist to look over your packing and shipping operations without obligation. Or mail the coupon for more information.

STURDY PACKING FOR FINE FOOD SPECIALTY

Dampness no longer affects the sealing of the cartons in which these carefully grown and packed mushrooms are shipped. The Acme Silverstitched carton is stronger than before, costs less and can be made twice as quickly.

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two exceptional compressed sheet packings

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Raybestos-Manhattan manufactures many different types of sheet packing . . . in widths up to 150" . . . and in thicknesses from 1/64" to 1/8". Each of these compressed sheets is of long-fibre asbestos, scientifically compounded to meet the exacting requirements of industry.

R/M No. 650, nationally known as "Pyroid," is shown above. It is recommended for applications where severe service conditions are encountered; for public utility service where excessively high pressures and temperatures are met. It can be used, however, for practically any condition, and makes an economical sheet packing even in cold water service.

Where first cost is an important consideration, many plants rely on R/M No. 670, also shown above. This sheet has a low rubber content and is approved by the National Board of Fire Underwriters for use in connection with such hazardous liquids as benzol, gasoline, and kerosene.

Whatever your requirements, see your authorized R/M distributor for the sheet packings best suited to your needs.

RAYBESTOS-MANHATTAN, INC.

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IT'S "PACKED WITH SATISFACTION" WHEN YOU USE R/M

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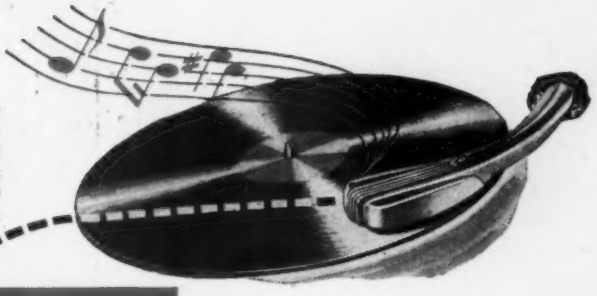

The G-E Electronic Reproducer, which magnetically recreates the full recorded sound, derives its magnetic field from a G-E SINTERED ALNICO 5 permanent magnet.

Announcing... A NEW G-E DEVELOPMENT SINTERED ALNICO 5

Actual size of G-E SINTERED ALNICO 5 permanent magnet used in the G-E Electronic Reproducer is shown in red.

NEW ENGINEERING DEVELOPMENT

SINTERED ALNICO 5, General Electric's newest magnetic material, now enables you to design intricate shapes with higher external energy than ever before. The minimum guaranteed available energy is 3,500,000 gauss oersteds for most sizes and shapes. New G-E SINTERED ALNICO 5 possesses tensile properties several times those of CAST ALNICO 5 and can be produced economically in small size parts. You get better surface finish plus closer dimensional tolerances with new G-E SINTERED ALNICO 5.

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New SINTERED ALNICO 5 has higher external energy than either SINTERED ALNICO 2 or 4. This makes possible new designs heretofore impossible or impractical. It is especially adaptable where small powerful magnets having high magnetic properties are required. Because of their great stability and external energy, SINTERED ALNICO 5 magnets can save valuable space in your product. You can usually improve your product by re-designing to use high energy G-E SINTERED ALNICO 5. Typical applications now in production which use G-E SINTERED ALNICO 5 include the following: meters, relays, fountain pens, electronic reproducers, and compasses.

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Bricks and Sticks

where to get it

From your Simonds Abrasive Company distributor, member of our distributor network serving key industrial centers here and abroad. He stocks Simonds Abrasive Company Grinding Wheels for every job and can advise you on wheel selection. Let us send you the name of the distributor in your area. Write now.

SIMONDS ABRASIVE CO.
Philadelphia, Pa.
Electric Furnace Plant, Simonds Canada Abrasive Co., Ltd., Arvida, P.Q.

SIMONDS ABRASIVE COMPANY
is a division of
SIMONDS SAW AND STEEL CO.
Fitchburg, Mass.
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Other Divisions:

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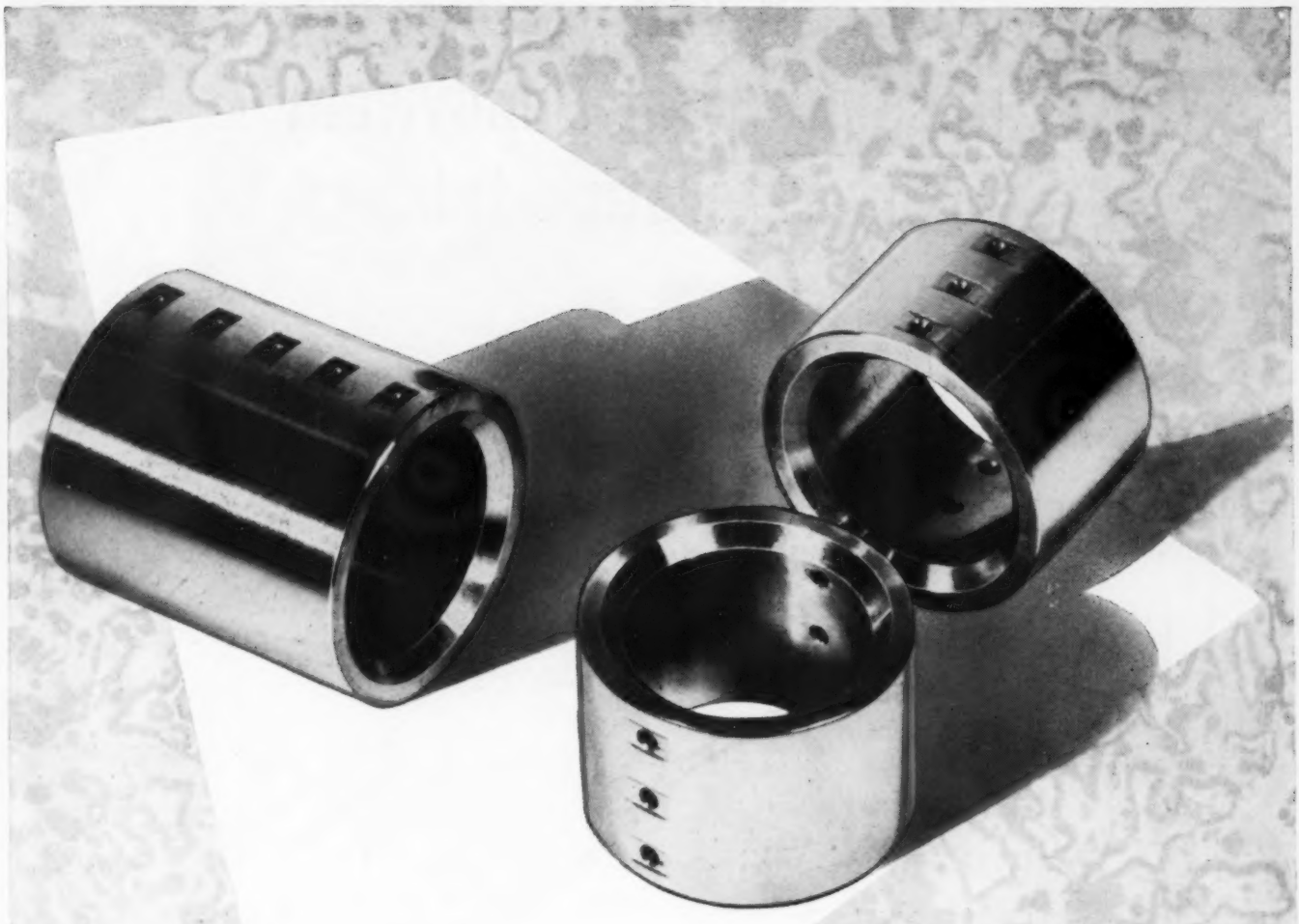
Lockport, N.Y.
Special Steels

SIMONDS CANADA SAW CO. LTD.
Montreal, Can.
Simonds Products for Canada

For the utmost wheel efficiency on every grinding job from roughing to finishing you can count on Simonds Abrasive Company Grinding Wheels—products backed by their manufacturer's experience as a leading producer of grinding wheels and abrasives exclusively, for over 50 years—products quality controlled from the crude abrasive produced in modern electric furnaces by Simonds Canada Abrasive Company, Ltd., to the finished wheels available through our industry wide distributors. For consistently high quality results use Simonds Abrasive Company Grinding Wheels.

SIMONDS ABRASIVE COMPANY, PHILADELPHIA 37, PA. • DISTRIBUTORS IN ALL PRINCIPAL CITIES



During the war 70% of Bunting output was Precision Bearings, mostly for aircraft engines. These facilities are producing, today, the exceptionally fine bearings needed for the precision jobs of Post-War Industry. The Bunting Brass & Bronze Company, Toledo 9, Ohio. Branches in principal cities.

Bunting

BRONZE BEARINGS ★ BUSHINGS ★ PRECISION BRONZE BARS

72

How can you possibly beat Bundyweld* for refrigeration tubing?

IT'S A DIRECT LINE TO LOWER COSTS!
THINNER WALLS... FASTER COOLING
HELD TO CLOSE DIMENSIONS
HIGH FATIGUE STRENGTH
1,000 LBS.
STRONG!
EASY TO FORM
...IT'S DOUBLE-WALLED FROM A SINGLE STRIP. YOU GET THINNER, STRONGER WALLS, LISTEN—

Bundyweld *and only Bundyweld* is double-walled from a single strip. Bundyweld is easy to fabricate because of its unusual ductility combined with the strength of steel. And you get thin walls with the strength of thicker walls, too, for much faster cooling.

How can you *beat* Bundyweld? Why, Bundyweld *hasn't even been matched* for refrigeration uses . . . for compressor lines and connecting tubes, condenser and evaporator coils.

Whether you need steel, Monel or nickel tubing, get in touch with the Bundy distributor nearest you, or contact *Bundy Tubing Company, Detroit 14, Michigan.*

BUNDY TUBING

ENGINEERED TO YOUR EXPECTATIONS

*REG. U.S. PAT. OFF

WHY BUNDYWELD IS BETTER TUBING

1 Bundyweld Tubing, made by a patented process, is entirely different from any other tubing. It starts as a single strip of basic metal, coated with a bonding metal.

2 This strip is continuously rolled twice laterally into tubular form. Walls of uniform thickness and concentricity are assured by close-tolerance, cold-rolled strip.

3 Next, a heating process fuses bonding metal to basic metal. Cooled, the double walls have become a strong, ductile tube, free from scale, held to close dimensions.

4 Bundyweld comes in standard sizes, up to 5/8" O.D., in steel (copper or tin coated), Monel or nickel. Call or write Bundy for tubing of other sizes or metals.

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Chattanooga 2, Tenn.	Chicago 32, Ill.	Philadelphia 3, Pa.	San Francisco 10, Calif.	Seattle 4, Wash.	Toronto 5, Canada

Bundyweld nickel and Monel tubing is sold by International Nickel Company distributors in all principal cities.

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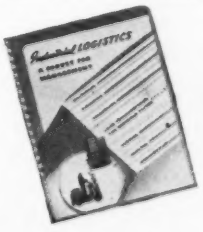
WHO HE IS—One of the materials handling engineers from the nearest of Elwell-Parker's 34 field headquarters—a specialist with many years' experience in industrial truck systems.

WHAT'S BEHIND HIM—Elwell-Parker's *longer* and *more varied* experience gained by 42 years' service to more than 300 branches of industry.

WHAT HE CAN DO FOR YOU—**1.** Analyze *your* materials handling problem—that is, *your* loads in relation to *your* plant and production system. **2.** Suggest the correct basic containers for your products, and their proper handling in master unit loads. **3.** Recommend an integrated system of Elwell-Parker Trucks, Tractors and Cranes selected from the 47 E-P models, and then have them "tailored" to *your* specific requirements.

To profit by his successful experience, *have us send him so you can start your planning now.* The Elwell-Parker Electric Co., 4519 St. Clair Avenue, Cleveland 14, Ohio.



SCIENTIFIC MATERIALS HANDLING fully explained in free booklet—ask for "Industrial Logistics".

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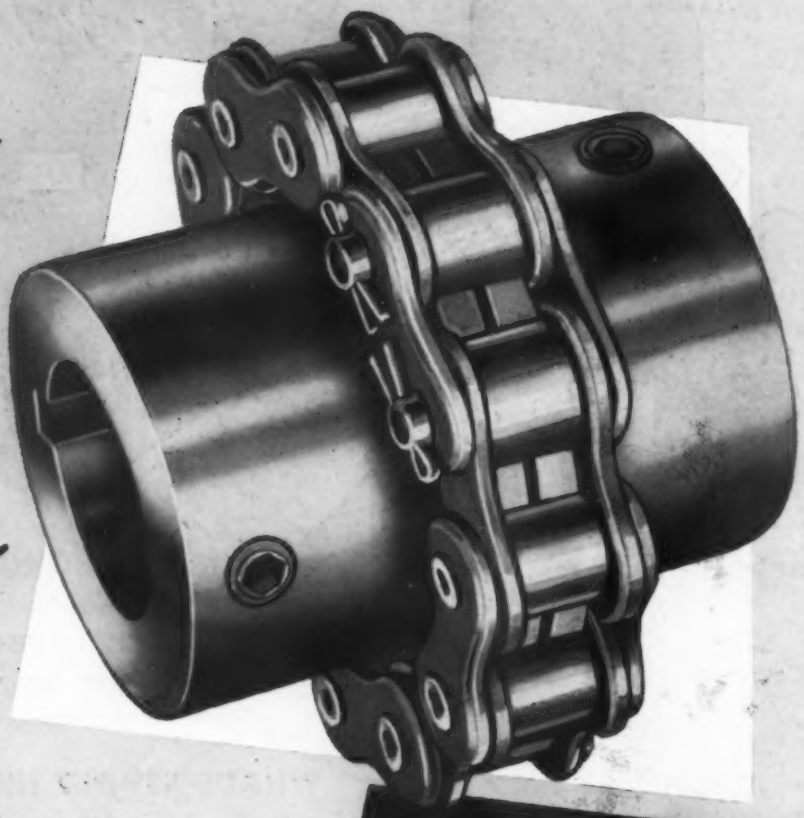
POWER INDUSTRIAL TRUCKS

Established 1893

WHITNEY ROLLER CHAIN *Flexible Couplings*

FOR YOUR DIRECT POWER DRIVE APPLICATIONS

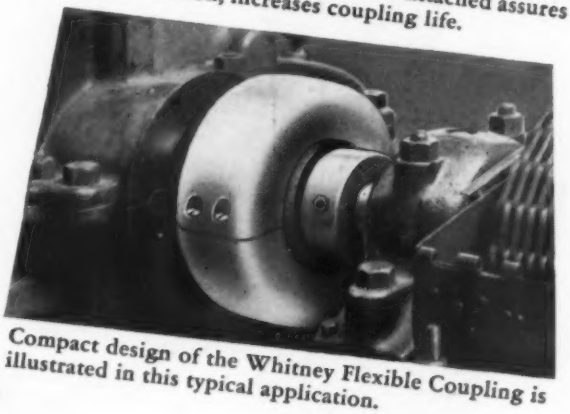


Whitney Flexible Coupling with cover attached assures adequate lubrication, increases coupling life.

Whitney Roller Chain Flexible Couplings offer the equipment manufacturer and machine user a practical and efficient unit for connecting power equipment to direct drives. All steel construction . . . precision roller chain and hardened cut tooth sprockets provide positive operation . . . assure long life.

Check the features of Whitney Flexible Couplings against your own requirements — simple, compact design, easily installed, allows for motor end float, disconnects without removing shafts or bearings, allows for slight shaft misalignment.

You can use Whitney Flexible Couplings to connect electric motors, gasoline engines, steam engines, etc. to pumps, compressors, blowers, beaters, hoists, and wherever a positive yet flexible direct drive is required. For complete information and engineering bulletin, write us today.

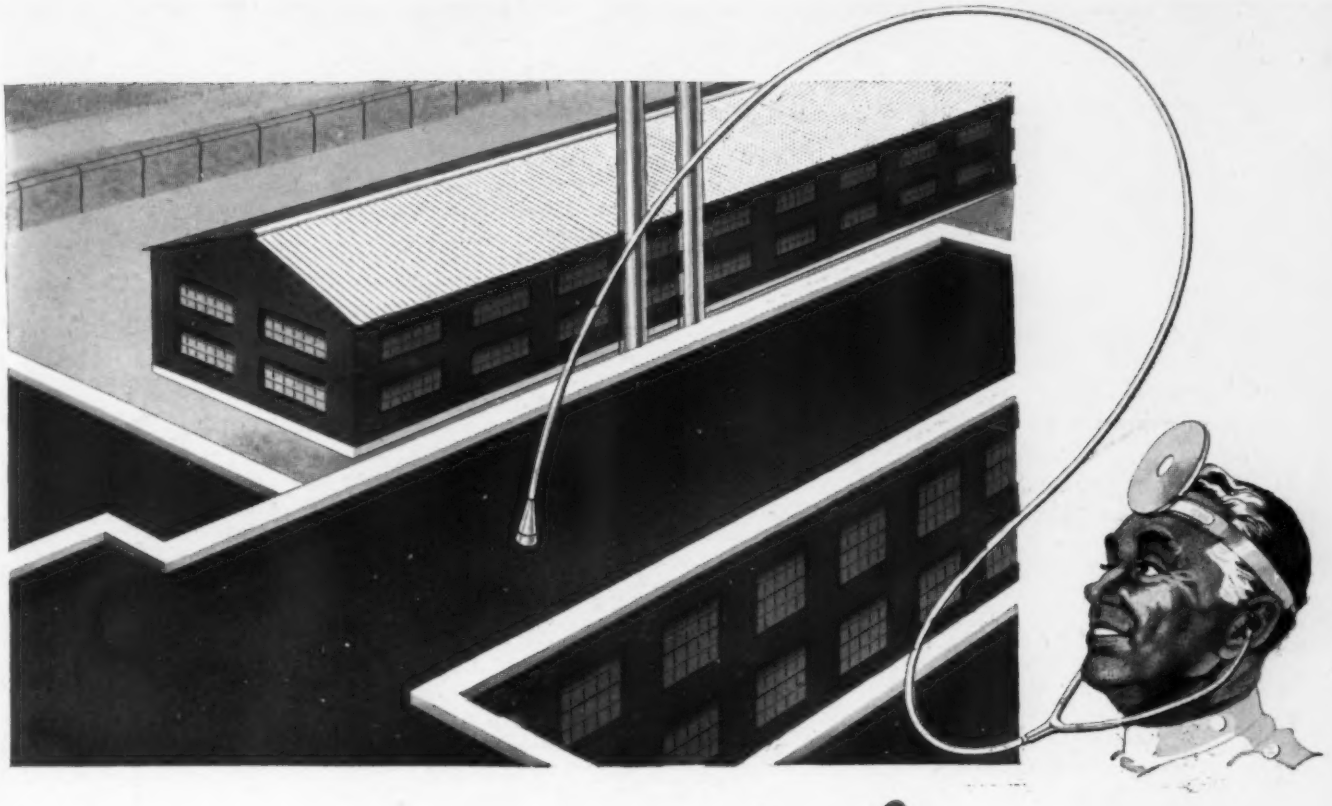


Compact design of the Whitney Flexible Coupling is illustrated in this typical application.

WHITNEY CHAIN & MFG. CO.

Division of Whitney-Hanson Industries, Inc.

207 HAMILTON STREET, HARTFORD 2, CONNECTICUT



. . . has your *roof* seen a *doctor* lately?

announcing a Carey service you can't afford to miss

NOW *a Free "Roof-Check" Service* is offered by **CAREY.** Here's what it is and how it works.

THE BASIS — Carey laboratory technicians and roofing engineers, backed by 75 years of experience in serving the roofing needs of American Industry, developed the **CAREY** "Roof-Check" method. It applies to all types of roofs. It is a scientific method of analyzing roof conditions which more and more industrials are using to assure maximum service at minimum cost from existing roofs.

THE PROCEDURE—You simply ask for a Carey "Roof-Check" survey of your property. A roof specialist does the rest. There is no obligation.

THE RESULT—You get a complete written report of the condition of your roof. It gives you detailed information about your roof and includes data on condition of flashings, parapet walls, gutters and all spots where trouble may start. It tells what, if any, maintenance or repair is needed, and the approximate cost. If none is required, the report says so.

"ROOF-CHECK" is a professional diagnosis for existing roofs. It has been created to help building owners understand and appreciate roof maintenance and to provide better longer-lasting roofs at lower overall costs.

75 years serving home and industry **Carey**

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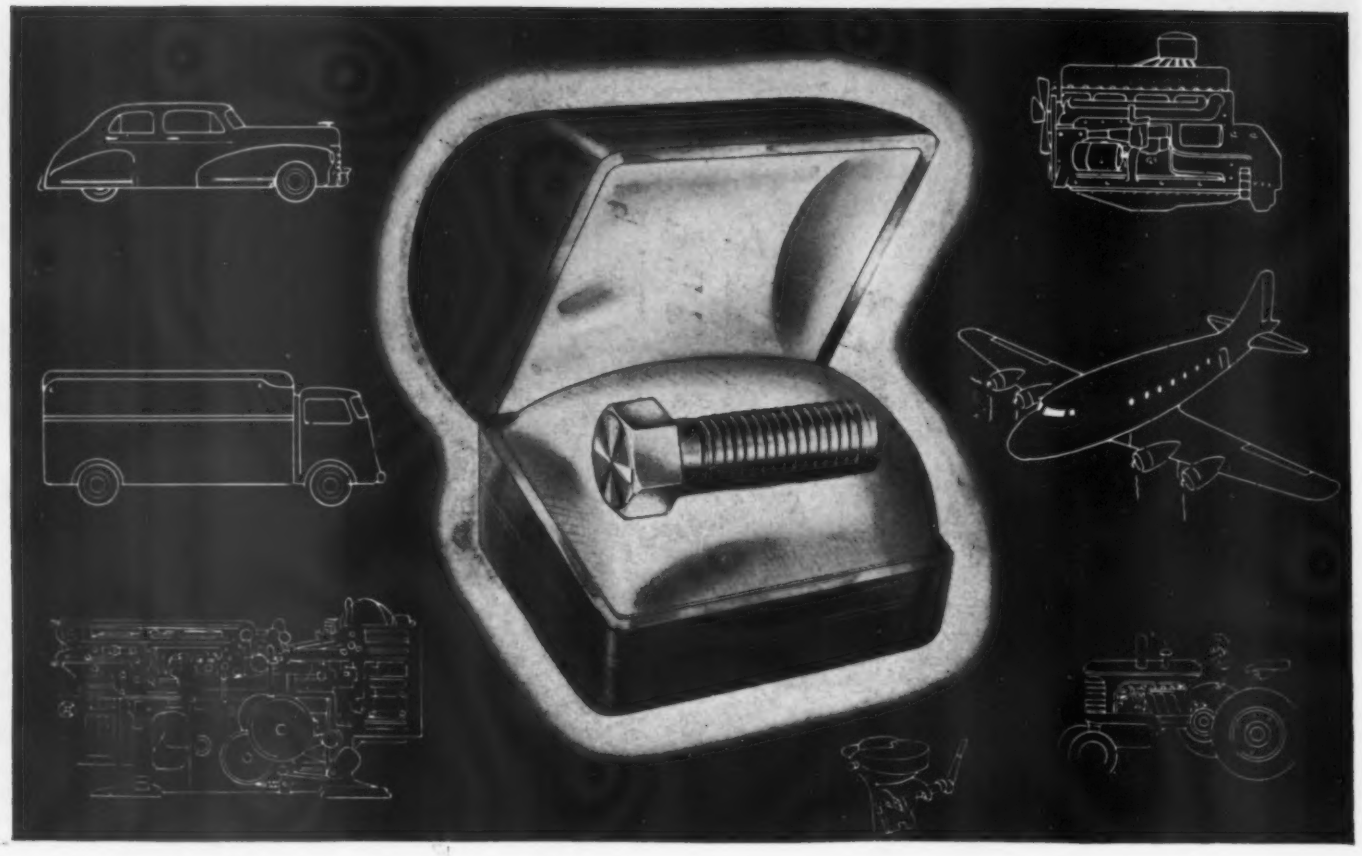

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Truly a jewel in the production of quality machinery and equipment, Shinyheads are justifiably famous. Their bright, shiny heads give that final, finishing touch, that extra sales appeal.

Just look at these features:

Hexagon heads — full finished — completely machined — top and bottom . . . bearing surface washer faced.

Top of head chamfered . . . sides parallel and smooth, mirror-finish. Clean-cut and precise.

Threads uniform and accurate to close tolerance dimensions for perfect fit to standard gauges.

Points machine turned — flat and chamfered.

More and more buyers simply specify Shinyheads. *Justifiably famous* — Shinyheads have earned the reputation as *"America's best looking cap screw."*

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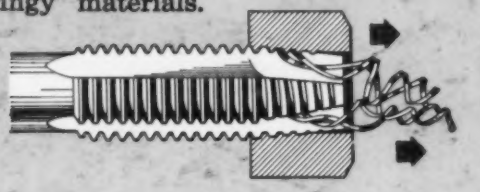
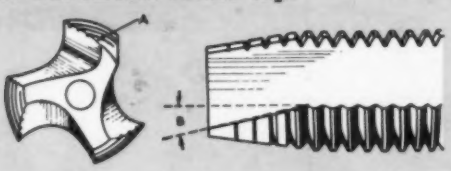
Facts about "GUN" TAPS

In the old days, most taps broke before they wore out.

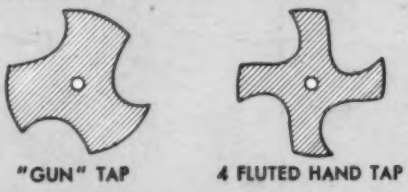
Then, for machine use, GTD "Greenfield" brought out the "Gun" Tap – a radical change in tap design. The "Gun" Tap "shot" the chips out ahead of the tap so that they didn't clog up in the flutes. This was especially important in tapping "stringy" materials.



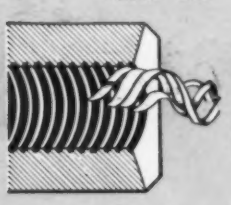
Note the design features of the "Gun" Tap in the illustration below. Cutting edges (A) at the point of the tap are ground at an angle (B) to the axis for four or five threads. This angle, plus a hook on the cutting edge of the land and the special flute form – makes long curling chips that shoot out ahead of the tap.



RESULT: a "Gun" Tap does not require deep flutes for elimination of chips. Therefore, fewer and shallower flutes are possible, insuring a large cross sectional area. This gives **EXTRA STRENGTH.**

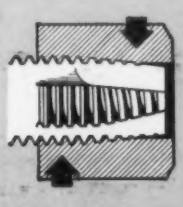


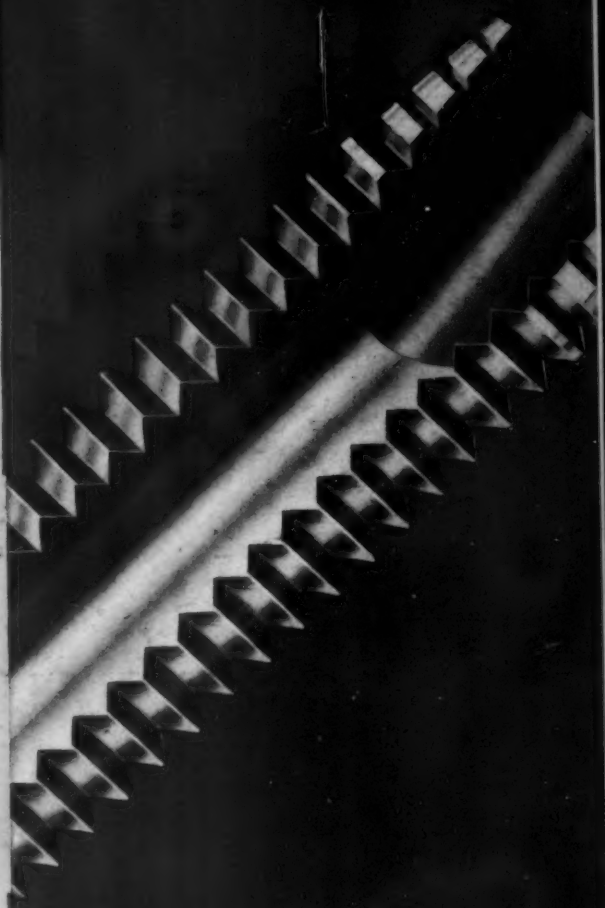
"GUN" TAP 4 FLUTED HAND TAP



And much **LESS POWER** is needed to drive the tap because it shears the metal instead of tearing or pulling it off with a scraping action.

Also a "Gun" Tap gives greater **ACCURACY** because the first few teeth do the cutting so that the rest of the threads can serve to steady the tap in the hole.





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THREADING TOOLS

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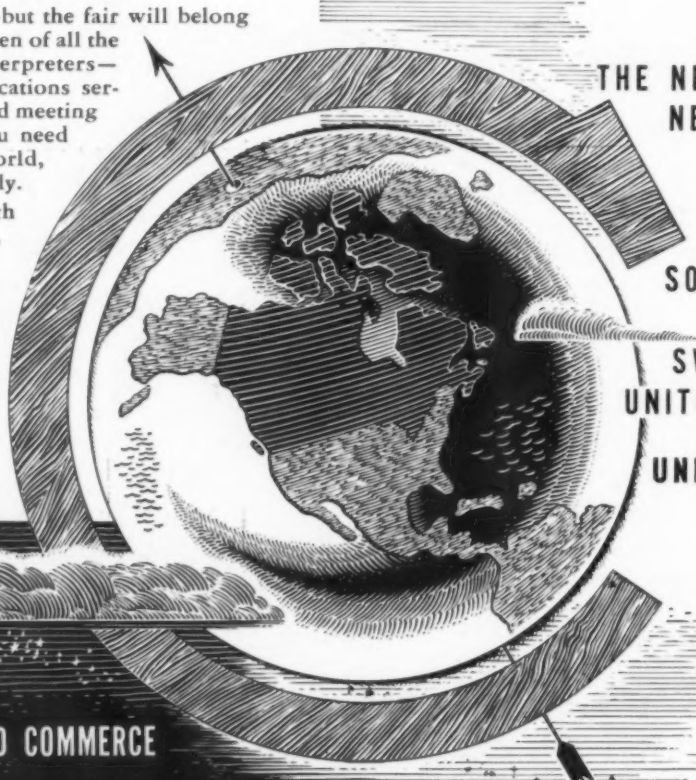
Canada will be the host—but the fair will belong to the traders and businessmen of all the nations. There will be interpreters—special cable and communications services—private restaurants and meeting rooms—all the facilities you need to do business with all the world, comfortably and conveniently.

Official invitations, which are required for admission, may be obtained on application to the Canadian International Trade Fair, Canadian National Exhibition Grounds, Toronto, Canada. Early requests will help to assure accommodation.



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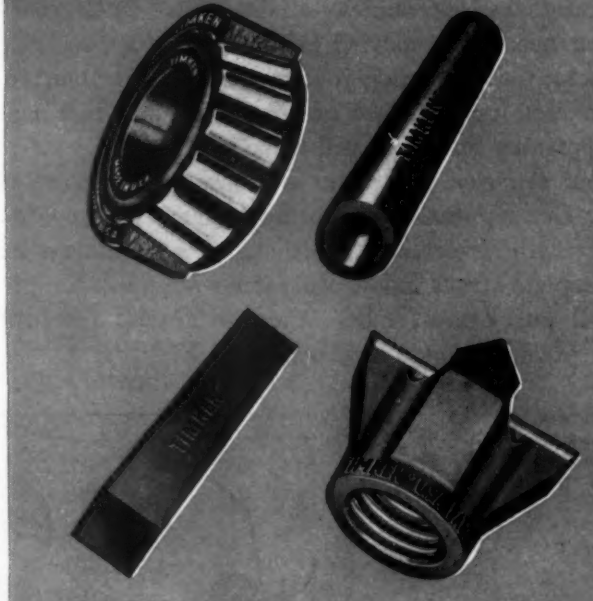

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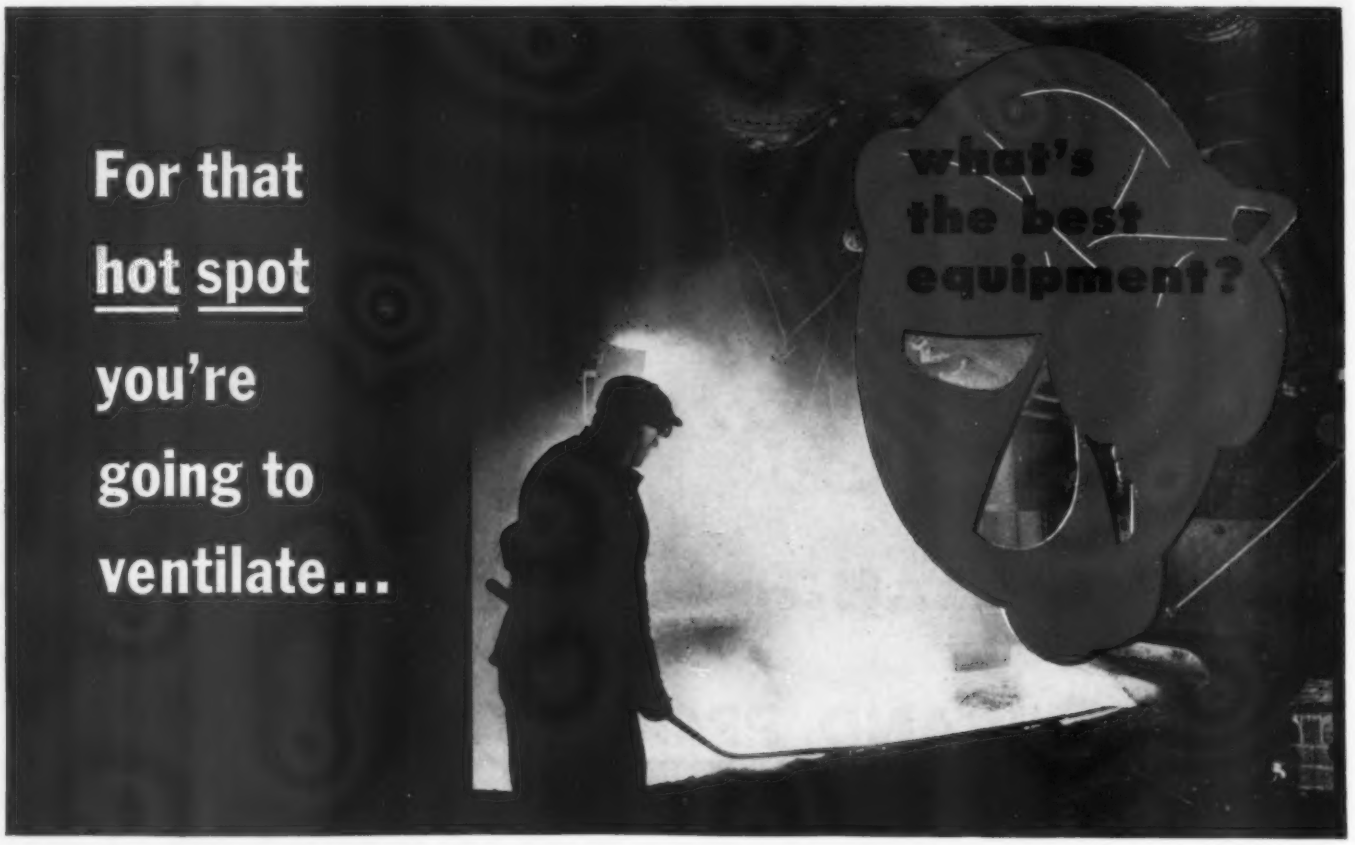

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The National Magazine of Industrial Procurement

APRIL, 1948

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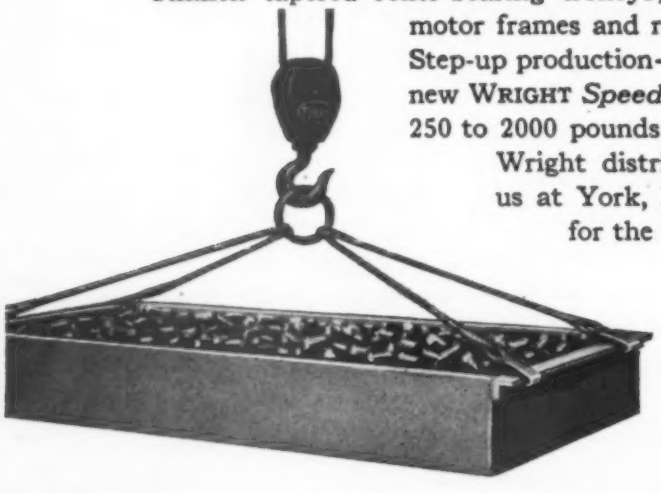

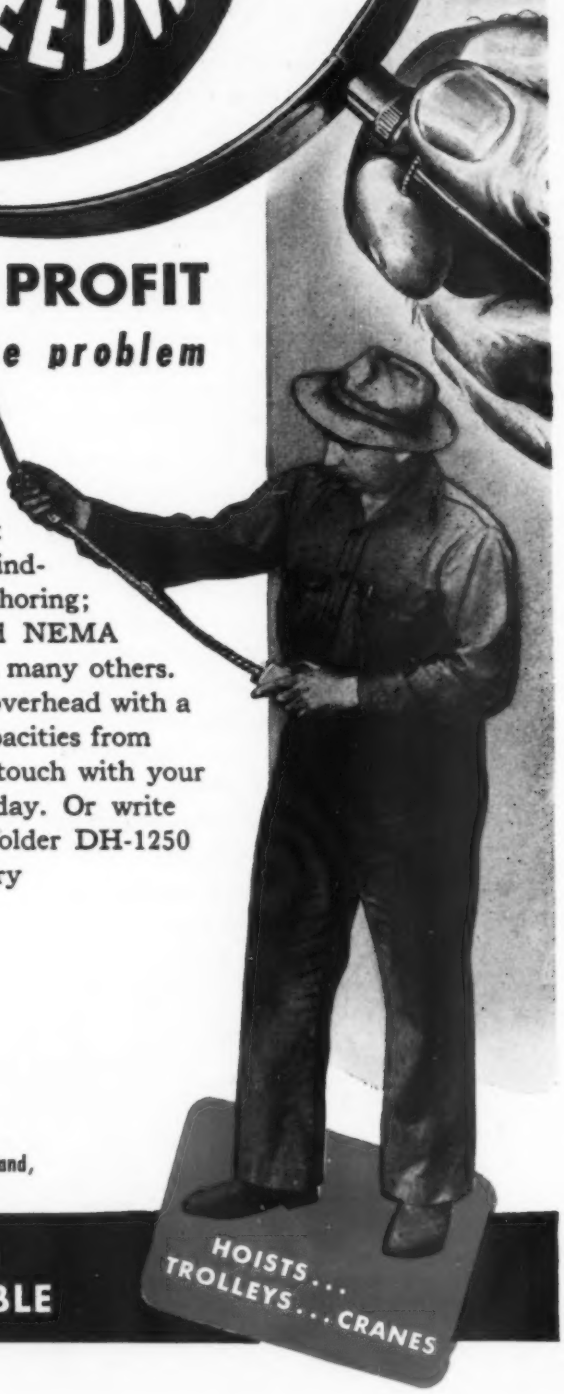

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OUTLOOK FOR SUPPLY AND DEMAND

MOST BUYERS and sellers view supply and demand in terms of the specific materials involved in their own sector of industry. Necessary and desirable as such calculations may be, the larger question of general business conditions under which all branches of industry must operate requires a broader view of the national situation as a whole. Within recent weeks, two significant sets of statistics have been released that throw quite a bit of light on the current situation and future outlook.

Capital outlay for producers' durable equipment in 1948, representing new plant and equipment, will amount to more than 16 billion dollars. This will be the third successive year in which such investment expenditures have topped every previous record. Making allowance for the higher cost of such equipment, the Department of Commerce reports that approximately 8% of total national industrial output is being used in this way, which is the highest percentage on record.

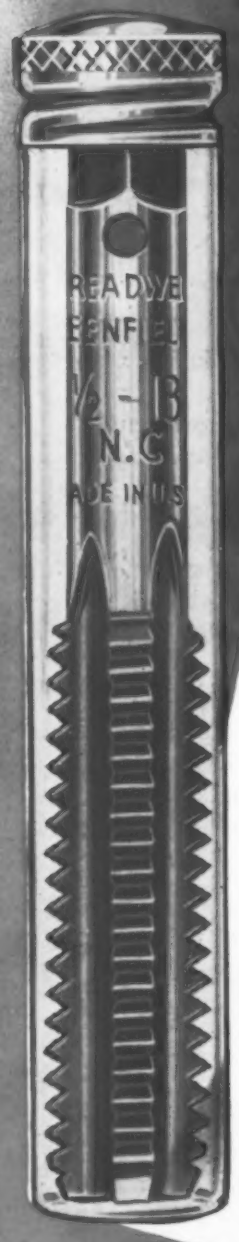
There are three general categories into which such expenditures fall: replacement of obsolete and worn-out equipment, and deferred maintenance that was not possible during the war years; adjustment of production capacity to eliminate bottlenecks and bring facilities into better balance; and outright expansion. The effect of each of these classes of projects is toward greater efficiency and increased output. The index of production has been at 192% of the 1935-1939 average since the beginning of the year. It should advance steadily as the new or improved facilities come into operation.

These capital expenditures have in themselves been a substantial factor in sustaining demand. This demand factor, however, is expected to taper off with the completion of present projects, and any such decline will directly affect construction and machinery building industries.

The dominant factor in demand is consumer income. In 1947, personal incomes reached a total of 197 billion dollars, an increase of 20 billions over 1946; 60% of this increase was due to higher wages, and the prospect is for a further advance in 1948. Consumer expenditures increased by 24 billions in 1947 with a corresponding decrease in savings. Indications are that this experience will not be repeated, but there is an offsetting factor in the probability of income tax reduction which would add several billions to spendable income. In specific fields, it is expected that farm income will be less in the current year.

Barring a general curtailment of production and consequent unemployment, which does not seem likely, the over-all picture indicates that productive capacity and purchasing power will be in balance, and at a high level throughout the year.

Stuart F. Heinritz



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HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers

Industry's annual bill for loss and damage to goods in transit, whether by train or truck, amounts to a staggering figure. And the fact that a **Freight Claim** is paid doesn't mean that this waste is not added to ultimate cost, for in the long run the customer has to foot the bill. The trucking industry has met the challenge with a comprehensive study of the causes of packaging failures. The results of that study are summarized in the article on page 90. Better practices in handling are effective only when the package itself is adequate to protect goods to the point of destination. Working together, shippers and carriers can accomplish much to eliminate transit losses.

Welding practice may undergo a major change within the next few years, according to the predictions of technicians who have been developing a-c equipment with some notable results in the way of greater speed and economy. Currently (no pun intended) a-c weldng is used in only 20% of industrial welding operations, but this ratio may be changed to 80% if present developments fulfill their promise. Details on page 131.

The controversial issue of **Price Criteria** as the basis for export licensing is discussed on page 128. There are two prime objectives in the government's policy on export control—to support our national program of foreign relations, and to combat inflation on a world wide front as well as in the domestic economy.

Prices sometimes make headlines, and the recent **Steel Price Advance** has stirred up a lively argument as to the significance and possible effects of this move. There is no group closer to this situation and more competeent to judge it, than the purchasing agents of industry. This month's Survey of Purchasing Opinion (page 97) gives a summary of their views on the subject, which will be of interest and value to everyone concerned with this basic market. Check your own views on the subject with those of other purchasing men reported in the study.

A first-hand report of the recent **Purchasing Conference** in Indianapolis appears on page 115. Commodity market outlooks and packaging materials figured largely in the program, providing expert and up-to-date information of interest to every purchasing man. Also included in the program was a significant paper by a former purchasing agent now in a Top Management position, on the topic, "What Management Expects from Purchasing." Mr. Meyer's paper is reprinted in full, on page 113. Don't miss reading this authoritative statement by a man who has seen both sides of the picture.

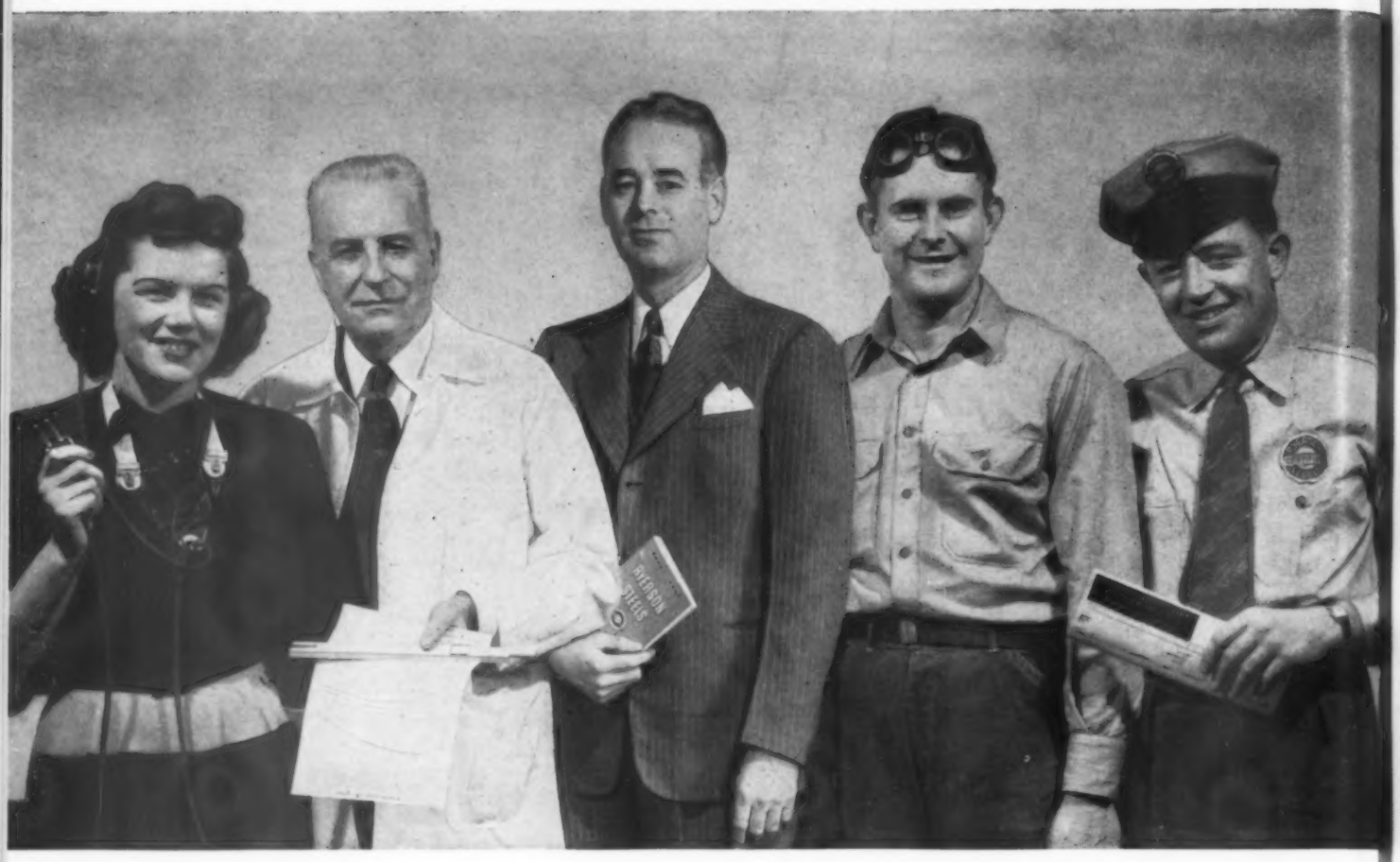
This month's **Guest Editorial** (page 89) is by Clair C. Pingree of Salt Lake City, who is currently serving as N.A.P.A. Vice President for District 1. In his discussion of "These Changing Times", he stresses the need for purchasing men to keep their fingers on the business pulse in meeting the new problems of procurement in the postwar industrial and economic world.

Coal Markets are determined by the law of supply and demand in respect to particular grades, and many coal buyers unnecessarily narrow their own sources of supply through their failure to consider all possible coals that may be adapted to their use. This is the thesis of the article on page 105, which proposes that the old method of trial and error be discarded in favor of a new technique in coal selection, based on complete data regarding the characteristics of a wide range of coals, correlated with the characteristics of boiler equipment. Such a method, Mr. Emmert claims, can be projected to the needs of an individual plant with scientific accuracy, so that phantom shortages can be eliminated, and a broader base established for coal purchases.

The article on **Pulp** (page 99) presents the basic information that every purchasing agent should have about the raw materials and processes involved in the manufacture of paper. It combines sound technical knowledge and exeprience with a practical viewpoint that takes the mystery out of a field that is notorious for its confusing terminology.

The insert section on **Where We Stand** (page 123) and the monthly compilation of manufacturers' reports on **Product Delivery Information** (page 135) will keep you up to date on current market conditions.

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 14) and the illustrated summary of **New Products & Ideas** now available for the industrial buyer (page 146) will help you to keep up-to-date on these matters.



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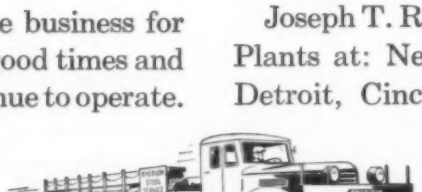


RYERSON STEEL

These Changing Times

● *By Clair C. Pingree*

ANYONE who has been in purchasing work over the period of the last ten years has had a wide variety of conditions to contend with.

There were the years when half our time was spent with the War Production Board, and the other half looking for goods after securing a search warrant from the Board. Management could never understand why you were not there with the materials, and kept asking you when they could be expected.

Manufacturers in those days didn't bother to ask if you were interested in securing the commodities they were making. They were not trying to sell, but to talk you out of buying. Days and weeks used to go by without a single salesman calling. When one of them did appear, it was just on a good will call. A good many black marks were put into the little book the purchasing agent kept for reference.

It seemed cock-eyed to you that you could secure an OK for materials that you knew were vital to the war effort, but still had to sit back and wait for other items that should have been easy to procure because of their non-vital nature. Then you attended the War Assets surplus sales and saw big piles of the very items you had been begging for, that the Government had picked up, stored, and never used, as you knew they never would be.

Now competition is back. Factory representatives you never heard of are out beating the bushes for busi-

(*Please turn to page* 336)

In addition to his duties as Purchasing Agent for the Whitmore Oxygen Company, Salt Lake City, Clair C. Pingree is Secretary of the company and a member of the Board of Directors. He has literally grown up with the organization. When he joined the company in 1932, it was a two-truck business, and Mr. Pingree's job was driving one of the trucks, starting routes for the delivery of gas and equipment in the near-by territory. Today the company has eighteen units and three branches in addition to the Salt Lake City offices.

He is a native of Ogden, Utah. His father was the son of an English convert to the Mormon Church and one of the early Pioneers of Utah, and his mother was the daughter of a Danish convert, also a Pioneer. He moved to Salt Lake City at the age of twelve and completed his high school and business college training there. His early experience was in the general merchandise field, wholesale and retail, as stockman, foreman and store manager, in Salt Lake City, Ogden, and Logan, with time out for a two-year mission in New York State on behalf of the Church of Latter Day Saints.

In 1936, four years after joining the Whitmore organization, Mr. Pingree was in charge of its purchasing department and became a member of the Utah Purchasing Agents Association. He was active in Association affairs, and was elected President of the Association in 1942-1943, after having served in the other offices. In 1947 he was elected Vice President of the National Association of Purchasing Agents for District No. 1, representing the Northern California, Los Angeles, Oregon, Utah, and Washington Associations, and the newly formed group in Honolulu, on the National Executive Committee.

Mr. Pingree is interested and active in civic and church work. He has been president of the young folks Mutual Improvement Association, in charge of scouting, and president of the Parent Teachers Association. He has been in charge of the beautification committee, representative of the Old Folks committee, and president of the local irrigation company. His hobbies are stamp collecting and farming.

His home is in Little Cottonwood Canyon, 18 miles southeast of Salt Lake City, where the Whitmore oxygen and hydro-electric plant is located. This is widely known as a winter sports area, one of the finest skiing spots in the entire nation. His family includes his wife, Geneve; a son, Richard, 20; and two daughters, Laurel, 17, and Joellen, 14.

THE $20,000,000 CHALLENGE

● *By H. H. Slawson*

Commercial truckers have made great strides toward reducing claims for loss and damage by attacking the problem at its source and working with shippers to eliminate causes

Nobody profits by a freight claim; it is an economic loss to all concerned

THE growth of the motor transportation industry is one of the striking features of American economic development over the past four decades. One fact suffices to tell the story—the fact that in 1904 only 700 trucks were registered in this country, while in 1946 the number was 5,725,692.

Not all of these were engaged in commercial hauling, but an idea of their number is suggested by recalling that during the late global conflict there were enough so occupied as to save the nation from a transportation disaster. Without the services performed by the trucking industry, the heavily handicapped railroads, although making a splendid record, would have been hard put to perform their part in national defense. This even railroad authorities concede.

As to the industry's position in industrial life today, any business man can supply the answer. Expansion of the use of motor transportation is evidence that the business world appreciates the distinctive service truck operators render. Industry wants motor transportation and industry is getting it.

But motor transportation has not attained its present solid position without growing pains, chief among them being its claim settlement problem. About this complicated subject harsh words have been spoken by shippers and receivers of freight, and their complaints have. too often, been fully justified.

Rapidly, however, the situation has been changing until today truck operators feel that they can hold their heads as high as anybody. It's true that they are paying an estimated $20,000,000 a year in settlement of claims for loss and damage incurred in hauling goods. But the railroads have lately been paying out $100,000,000, an all-time high. Percentagewise, however, truck transportation, it is asserted, is on a more favorable footing.

The railroad ratio of loss and damage claims to gross revenue in 1946 was 1.57%, according to the freight claim division of the Association of American Railroads, as cited in a recent statement from the American Trucking Association. Analyzing its own claim record, the truck operators' national organization points out that the railroad figure "is based upon all railroad freight operations and is heavily weighted by an overwhelming volume of carload traffic that is least susceptible to loss and damage."

"When the railroad loss and damage experience with respect to less-carload traffic is isolated," continues this statement, "the result is quite different. In 1946 railroad loss and damage payments on less-carload freight amounted to 6.15% of less-carload revenue—much higher than any such ratio ever recorded by motor carriers."

The analysis by the truckers, on the other hand, based on annual reports of 776 Class I motor common carriers of general freight, showed that their cargo loss and

The package at the left is licked before it starts. The carton has been patched and repatched, and is wholly inadequate to protect the contents from damage, loss, and pilferage.

The trucking company would be entirely justified in refusing to accept such a package for shipment. The alternative, at right, is to repack and reseal the entire package.

damage payments were 1.25% of their gross revenue in 1946, and that the combined cost of cargo insurance, plus cargo loss and damage claim payments, represented 2.20% of the carriers' gross revenues.

These figures have been cited, not for invidious comparisons, but to emphasize that the motor truck industry has been doing something about its claim problem. That combined freight claim ratio of 2.20%, they point out, brought to a stop an upward trend that began in 1941 and continued to 1945, when the ratio had climbed to 2.34%. The improvement in 1946, they say, was due almost entirely to the reduction in the ratio of cargo loss and damage payments. How that reduction was brought about constitutes a bright chapter in a fascinating story of an industry's efforts to rehabilitate itself and regain public good will.

To get a bit ahead of the story, the national and state programs of the American Trucking Associations to stimulate claim prevention activities has made such forward strides that in 1946 the American Public Relations Institute awarded an "Oscar" to ATA for its outstanding achievements in eliminating the former precarious position of motor carriers in this regard.

Since 1937 the trucking industry's national organization has been steadily promoting formal efforts to improve its members' claim handling procedure. In that year a Freight Claim Rule Book was prepared and over 1,000 motor carriers have since agreed to follow strictly the procedure outlined for settlement of loss and damage claims. Thousands of other truckers, however, remained inattentive to the benefits they and the industry generally might enjoy by following the rules.

Photographs by courtesy of the American Trucking Association, Washington, D. C.

Here is a claim in the making. Although the package is labelled "Fragile" and is securely bound with heavy rope, the container itself is ready to collapse.

Carriers and Critics

Eventually, over the years, the situation reached a point where exasperated shippers and receivers of freight threatened to seek from the Interstate Commerce Commission regulatory measures which would definitely react to the industry's economic disadvantage.

Frankly recognizing that there was ground for this hostile proposal, ATA's freight claim section asked their critics for a conference to clear the air and determine what might be done. Present at the meeting in Chicago, in June, 1944, were representatives of the National Industrial Traffic League, Chain Store Traffic League, Retailers Transportation Committee and the National Retail Dry Goods Association. All of them were there with fire in their eyes.

Responding to the invitation by ATA's officials to "let your hair down and tell us what you think can be done," the spokesmen for thousands of discontented shippers and receivers began pitching. Chiefly their complaints centered on the dilatory tactics of many carriers in settling claims; their failure to establish uniform policies on loss and damage claims; their refusal to permit "bad order" notations on delivery receipts; refusal of originating carriers to make full settlement on interline shipments; their disclaimer

The package at left has been received by the trucker in poor condition, complicated by poor marking. It represents a potential—in fact, almost certain— basis for a freight claim. The trucker's only resource is to reject the shipment or, as shown at right, to do what the shipper should have done in the first place, rewrap it and provide fresh, legible markings.

Bumping a package into place with a hand truck (left) may be the simplest method, but it leads inevitably to damaged freight. Truck carriers are educating their employees in proper handling methods (right)—wheeling the hand truck as close as possible, then loading each package carefully so as to preserve the original container.

of liability for concealed loss and damage; and their failure to make inspections when requested.

ATA's appeal for a period of grace in which to launch an educational campaign for correction of bad carrier practices was, however, agreed to, and the conference adjourned to meet again three months later.

In the succeeding four years these meetings between carriers and representatives of their customers have been continued, and it is generally recognized that the give and take methods prevailing in the discussions have decisively assisted in the steady reform of the motor truck industry's claim settlement practices.

The carriers, at first, were reluctant to point out to shippers how some of their own methods contributed to the creation of claims. But now that the truckers have made substantial progress in cleaning their own house, the time has come, so the carriers feel, to begin an intensified drive for correction of the shippers' faults. More about this later.

The Human Element

ATA's approach to the problem of educating the industry is actuated by the principle that "Nobody profits by a freight claim. It is an economic loss to all concerned." Realization by the carriers of the effect claim payments have on their cash boxes has brought with it the further awareness of the importance of claim prevention, and it is in this direction that the national organization's educational efforts are now being directed. The whole problem, on analysis, resolves itself down, pretty much, to one element—the human element.

As expressed by John M. Miller, secretary of ATA's freight claim section, "It is the manner in which the employee applies himself to his job that governs the amount of freight claims which will, or will not, accrue over an interval of time. If he is conscientious and proud of the job he is doing, he will take the time to do all that is necessary to insure safe delivery of the shipment he is handling. Naturally, of course, he must first know how best to perform the assignment given him. This is the responsibility of management—the responsibility of educating employees regarding proper handling of freight to assure perfect shipping."

To guide management in its work with employees, standard methods for handling freight have, accordingly, been set up by the national organization and passed on to affiliated state groups, where direct contact with individual member carriers is made through state and city claim prevention committees, regional claim associations, weighing and inspection bureaus, and other organization machinery.

For the 1948 educational program ATA early distributed a 20-page pocket-size manual entitled "Instructions For Drivers and Dockmen", around which each operator can center his own claim prevention campaign. Still another educational device is a decalcomania for attachment to truck windshields, which

Double jeopardy. There will be a freight claim for this Easter millinery, crushed and dirtied by packaging failure, and a disgruntled customer will long hold it against the vendor.

bears the slogan: "Mr. Driver—Remember", and lists four important procedures to be observed in picking up shipments.

Under way, also, is a poster contest whereby the national organization expects to secure ideas for new posters dealing with claim prevention. At the same time, it is felt, the contest will stimulate employee thinking about this problem.

"Claim Liability Clinics" are to be continued, as in the past, the association has announced, and its slide-sound film "The $20,000,000 Challenge" is to remain in circulation. Presenting, as this does, a number of "horrible example" pictures, along with instructions on performance of specific phases of freight pick-up, handling, loading, and delivery, this effective visual education tool has aroused tremendous interest in claim prevention among drivers, helpers, handlers and management alike. Production of a second film of similar nature is also under consideration.

Regional Efforts

Among the various groups concentrating on claim prevention, the work of the regional claim association deserves especial attention because of the manner and spirit in which many outstanding accomplishments have been made.

Hardly had that first Chicago conference with the angry shippers and receivers in June, 1944, been adjourned, than the Southwestern Motor Carriers Claim Association, at Dallas, Texas, organized a claim prevention "school" for its membership of 225 carriers in Arkansas, Louisiana, New Mexico, Oklahoma and Texas, most of whom were small carriers with no specially trained claim agent.

Instructors were experienced claim men from some of the larger companies, whose task was to convey to the carriers the attitude of irate shippers and lead an experience exchange in which problems encountered in practical operations were discussed and their bearing on ATA's standard rules of procedure reviewed. Since then, these schools have expanded until today they are a frequent feature of the entire trucking industry's claim prevention drive.

This same Texas organization was also a leader in setting up clearing houses for locating astray motor freight involved in claims. This service, in brief, calls for circularization throughout the industry of two lists, one carrying descriptions of freight on hand at individual carriers' terminals, for which no disposition directions are available; the second reporting goods short on an individual carrier's own operations.

By matching up these over and short reports, merchandise worth thousands of dollars has been dug out of the "dog house" and sent on its proper way with tremendous effect in reducing the cost to the carriers of lost shipments and speeding up satisfactory settlement for them.

Practical Results

Reports of this work submitted at one conference revealed that one regional group had, at that time, effected clearance for over $94,000 worth of astray freight. Another group reported that in the first six months of its matching service 25 lost shipments, valued at $1,567, had been located and claims for that amount thereby eliminated. Similar reports come frequently from all the other groups.

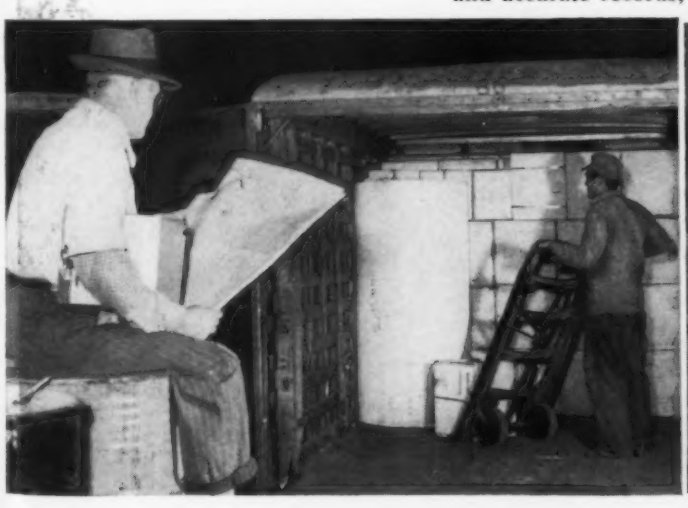
Typical of the microscopic thoroughness with which the search for lost goods is being conducted is a case involving a shipment of hosiery by truck from a Chicago wholesaler to a Virginia consignee. En route it disappeared and a claim was paid for its loss. Then, one day, the manager of the Motor Carriers Southern Claim Conference, Atlanta, Ga. was poking through an accumulation of "over" freight at a Louisville motor freight terminal, to see what he could see and possibly match up some over and short reports.

There in the pile he found the missing carton of hosiery, right where it had been lying for five months. Tracing its history backward, he found that the box had travelled from Chicago to Chattanooga, Tenn., where it was to be transferred to another truck line for the final leg of the trip to Virginia.

This trucker was using joint terminal facilities with a third carrier, but there was no partition between the bays occupied by each in the building. In some way the hosiery shipment got over the line into the third carrier's space. Here a freight handler found it while loading a Louisville-bound truck and, because the hosiery carton looked just like others he was assembling, off the hosiery went in the wrong direction.

Had it not been for the "over and

One of the best ways for a checker to breed a freight claim is to read the racing results instead of tending to business. Careless checking and errors in paper work are responsible for many claims, which could have been avoided at the source by proper supervision and accurate records, as indicated at right.



short" lists carried into that warehouse by the alert Atlanta man, it is wholly possible that those nylons might, even today, be still lying there in Louisville. Apparent here, also, is evidence of how the "human element", previously mentioned, can unwittingly cause expensive and annoying complications in truck transportation operations.

Middlewest Motor Freight Bureau furnished still another instance of how the industry's efforts to prevent claims is bearing fruit. Receiving a request to inspect some freight designated on the bill of lading as so many pieces of "copper tubes", inspectors from this Kansas City bureau found the commodity to be precision-built copper tubing, especially fabricated for use in radio transmission. Tubes were eight inches in diameter, 20½ inches long and, suspended within each by porcelain pins, were other 3-inch copper tubes. Tube ends were covered with fiber plates.

This shipment had been offered to the carrier in loose form for a haul of over 2,000 miles. It was valued at $3,744.40 and, since damage to some part of the tubing or porcelain was certain to occur, the carrier would have been subject to a costly claim. He was saved, however, by the inspection which resulted in refusal of the shipment, with the advice that it could not be forwarded in loose form.

Many shippers have complained that rules embodied in ATA's Freight Claim Rule Book governing the handling of stray freight are not being observed. It should be remembered, say the truckers, that established rules prohibit delivery in absence of billing, without proof of ownership. Proposals to revise the rules have been under discussion for some time and when adopted, the changes deemed desirable should do much toward easing the irritation created by previous conditions. This attitude of willingness to consider shippers' complaints fairly and do something about them, suggests that motor carriers will lean a long way backward to satisfy their customers.

No Excuses Offered

Trucking industry leaders in the claim prevention campaign have been unsparing in criticism of their own faults, a position which has contributed immeasurably to the good results accomplished.

There is no such thing as an excusable claim, says Secretary Miller of ATA's freight claim section. Claims, he insists "are manufactured in every case by an error of some kind."

"Statistics show," he continued, in a discussion of this phase of the problem, "that more than 60% of truck loss and damage claims is due solely to the negligence or ignorance of trucking employees. More than one-third of the claim payments result from shortages, and one-fourth result from improper handling.

"These payments are all preventable. They are caused by failure of employees to get all the freight they sign for, careless interchange, sloppy delivery, and ignorance of proper loading, handling, stacking and stowing methods."

Truck freight, by its very nature, can be "safe" freight, he insisted, adding that truck freight does not encounter "humps" in rail terminals; it does not have to pass through rail classification yards; it is not subject to potential damage in "taking up slack" in a railroad train.

"Shippers," he continued, "want their goods transported safely. They want it delivered speedily. They want all of it delivered and they want it delivered without damage. Next to prompt service, the shipper wants safe service and, in the event of loss and damage, he demands efficient claim handling."

Claims, Mr. Miller advises the industry, should always be investigated before payment, but the claim agent should not proceed with the thought in mind that some ground must be found for declination.

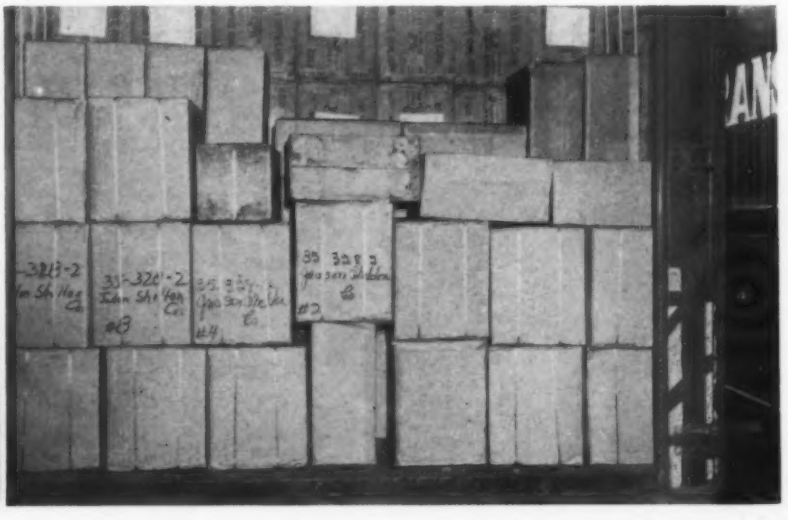
"When a claim is received," he said, on one recent occasion, "face the fact that it comes from a customer who believes that the carrier did not fulfill its transportation obligation to the fullest extent. Be fair with the claimant. Don't decline claims on flimsy technicalities. Declination must be based on substantial grounds and the carrier should feel obligated to explain these grounds to the claimant. Most claimants will be reasonable in these matters."

Shippers Can Help

Coupled with this frank "family circle" recognition of the carrier's responsibility, however, Mr. Miller draws attention to what shippers often do that causes claims. Reports of loss of heavy machinery, barrels of flavoring syrup, large cases of

(*Please turn to page* 334)

Even when freight is properly packaged, poor loading can create a new hazard en route. A short stretch of bumpy road frequently results in a situation like that at the left. If freight is stacked tightly and evenly (right), the load will not shift, and will reach its destination safely.



KEEP A SCORE ON PURCHASING PERFORMANCE

By Leslie F. Robbins
Purchasing Agent
University of Colorado

A UNIVERSAL yardstick by which to measure the effectiveness of a purchasing department seems to be a hopeless quest. That doesn't mean, however, that there is no profit in trying to give some sort of rating to one's purchasing performance. The very act of self-examination is wholesome and often reveals points of possible improvement. Too often we are at a loss for the best place to start and the kind of questions to ask ourselves. Those which follow are some that have suggested themselves to me. They might be helpful to someone else.

Aims and Objectives

What are *your* aims and objectives for *your* purchasing department? State them as clearly as you can, expressing your conception of your purchasing department's responsibilities. Conditions differ from company to company; for instance, there are varying degrees of centralization and some purchasing departments are limited in scope more than others, etc. Here is a general statement; your statement should go on to be specific to your individual situation: *The aim of effective purchasing is to procure materials and services of the most appropriate quality for the particular purpose, at as low an ultimate cost as is obtainable consistent with sound policy, and to have the required quantity on hand at the time and place it is needed, with as little excess quantity as is consistent with low cost.*

Does your purchasing department have and make consistent use of a written set of purchasing policies on policy matters? (Such matters as the following are matters of policy: granting endorsements and testimonials, purchasing for employees, degree of forward buying, buying from local sources at a premium, degree of reciprocity, etc.) Stated policies make for consistency. If you have none score yourself zero on this point. If you do have stated policies, score your consistency in following them, up to 100 points for perfect performance.

Does your department have an up-to-date set of written instructions for each position in the department? If not, score zero. If you do have, score according to the percentage of effectiveness you judge to be a fair evaluation, up to 100 points for a complete up-to-the-minute manual, followed carefully by all members of the department.

Personnel

A. *Salaries.* Score on basis of 100 points for perfection, in accordance with the degree of conformity to the local pay scale for equivalent jobs. Where a company is paying *more* than average for average performance, the service is probably costing too much. Superior pay should go with, or induce, superior service. Where pay is *less* than the local average, the turnover will be excessive and the company will lose.

B. *Quantity.* Excess? deficiency? right amount? Is there enough needful work to keep all persons busy full time? Is overtime work required on the part of any workers? Are vacations and holidays sacrificed? Are there seasons or periods of spurts and lulls that should be levelled out?

C. *Quality.* Rate or score each person in the department on the basis of 85 to 100 points if above average, 70 to 84 points if average, and 55 to 69 points if below average, on each of the following groups of qualifications:

(a) Health, physique and energy.

(b) Intelligence, alertness, judgment, aptitude for his job, accuracy, common sense.

(c) Social qualities: leadership, personality, tact, initiative, cooperation, responsiveness, temperament, ability to get along with others.

(d) Personal qualities: reliability, integrity, self-confidence (rate down if excessive), loyalty, capacity for advancement .

(e) Training experience or ability in his work.

System or procedure will not insure effective purchasing; in fact, excessive system (red tape) will hamper it. However, an adequate system makes good judgment in purchasing more effective. Listed here-

in are some of the standard procedures in purchasing. In each instance, if the particular procedure would have value for your purchasing department, score zero if you do not have it. If you do have it, score in proportion to its effectiveness in actual use up to 100 points for a perfect performance:

(a) Requisition procedure, (b) request for quotation procedure, (c) purchase order procedure, (d) follow-up or expediting procedure, (e) tickler file procedure, (f) catalog library procedure, (g) invoice checking procedure, (h) analysis of bids procedure, (i) receiving procedure, (j) inspection procedure, (k) shipping order procedure, (l) economic and forecasting function, (m) periodic reports to management.

Rate also any functions not included in actual buying procedure, but which are delegated to the purchasing department to perform, such as storekeeping, traffic, salvage and disposal of scrap, permanent property inventory, other.

Office Space, Equipment and Records

Score your department on each question, 100 points for the best answer you could think of.

Is there any deficiency of space, considering the standard of not less than 75 square feet per person?

Is there adequate lighting, considering the standard of at least 40 footcandles at the desk top?

Is there sufficient and reasonably dust-free ventilation?

Are there rest-room and locker facilities, advantageously located, clean and modern?

Is the grouping and arranging of the desks and files such as to facilitate operations; for instance, continuous line flow of work?

Are the files readily accessible and placed properly to prevent congestion when being used to capacity?

Is the location of the purchasing department with relation to other departments the best that could be provided?

Do the files provide the following records: file and cross-file of purchase order copies, requisition file, purchase record by commodity classification, inspection record, quotation file, specification file, correspondence file, file of claims?

Are the files kept up to date and complete?

Is there an adequate catalog library, indexed and cross-indexed and kept current?

Is there enough furniture and equipment: desks, files, typewriters, dictaphones, calculators, mimeographs, telephones, etc?

Is there an adequate library of reference material: trade registers, purchasing and trade magazines, pamphlets, materials handbooks, reference books on purchasing, forecasting and economic service, etc.?

Performance

Up to this point we have considered factors which would determine whether the purchasing department is staffed and equipped to properly perform its function. Now we should like to know how well the machinery works. Take a fair sampling of the orders placed in the past year, say every 25th purchase order and send it through an evaluation clinic. Every item on each of these sample orders is either a purchase of an item never purchased before or else it is one that has been previously purchased. If it was a 'repeat', answer each of these questions and rate the performance, 100 points for a perfect performance:

Was the purchasing department qualified to set up the specifications and select the source?

Was adequate effort made before reordering to see whether the market factors had changed since the previous purchase?

If the same quality was bought as before, was it the quality best suited to the particular need?

Was the price paid the best price obtainable, consonant with sound purchasing policy?

For every item purchased for the first time, answer the following questions:

Did the purchasing department set up the specifications?

Was the market thoroughly canvassed to obtain the quality best suited to the particular need, with no undue concessions to lower prices on poorer quality and no premium for a quality better than needed? (The user ought to have a say about this.)

On all items, answer the following:

Was the material on hand on time? too soon? too late?

How about the quantity? Did a market change catch the stock on hand in an unfavorable state?

Negative Factors

Compute losses due to mistakes in the purchasing department: price errors, failure to earn cash discounts, poor judgment, etc. Give these negative factors a minus value in your scoring.

Were there instances wherein new and favorable sources were located which should have been discovered sooner than they were?

Were there occasions wherein confidences were betrayed or other recognized purchasing ethics violated?

Score on basis of 100 points for perfect performance.

A. Internal cooperation: Is the spirit of cooperation and teamwork within the purchasing department all that could be desired? Are effective periodic staff meetings held that bring out valuable suggestions from members?

B. External, or public relations: Does the purchasing agent hold memberships in and actively participate in organizations of purchasing agents to which he is eligible?

Cooperation and Other Relationships

Does the purchasing department cooperate satisfactorily with all other departments?

How do visiting salesmen rate the department as to the treatment they receive? Are they able to do their work effectively? (A secret ballot among salesmen might give this index.)

Does the purchasing department promptly pass along to other departments useful information it receives concerning new industrial developments?

How many instances of unauthorized purchase occur, and how are they handled so as to discourage the practice?

How successfully does the department handle cases wherein the salesman has gone around the purchasing department to solicit business in the shop?

Miscellaneous Factors

Claims and adjustments: was full recovery realized on all claims which were clearly justified?

Is the percentage of emergency purchases kept within reasonable bounds?

What profitable results came from research originated by the purchasing department?

Was effective effort made to standardize between the differing preferences of various departments?

It is evident, of course, that the foregoing points of evaluation are not of equal weight in reaching a composite score for the purchasing department's work. Weigh them carefully according to their respective importance to your own situation. The result will be a departmental score which will be a useful basis for an attempt to improve your performance in the years ahead.

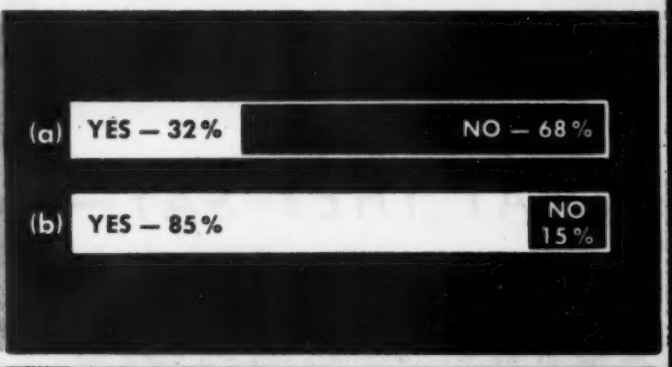
How Will The STEEL PRICE RISE Affect Industry?

With the recent steel price rise now in effect, the Congressional investigation and the steel companies' defense completed, Government, industry and the public are waiting to see what, if any, will be the economic consequences of the move. To get an expert estimate of the results of the price rise, PURCHASING has polled the men who buy the steel that reaches the consumer as manufactured products — the nation's purchasing agents. The opinions of a cross-section of industrial purchasing executives in all parts of the country are summarized here.

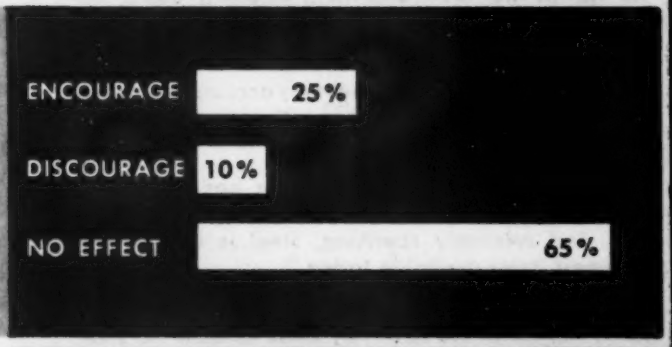
1 Do you believe that the steel price increase is:

(a) a strong inflationary factor heralding a general price upturn

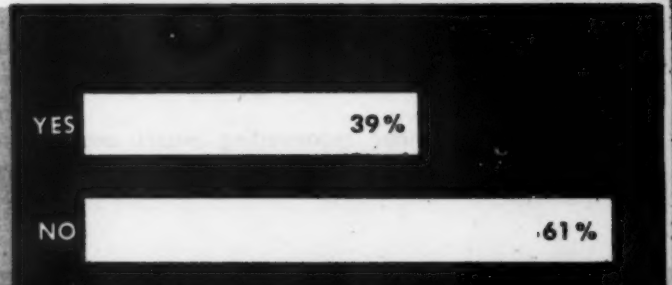
(b) a normal price-cost adjustment to be considered independently of the general commodity market



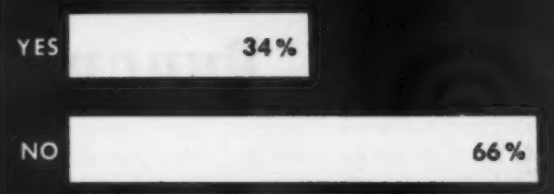
2 In your opinion, will the price rise tend to discourage or encourage black markets or leave them unaffected



3 Do you think that the price rise is justified on the grounds that it will aid the steel industry in its expansion program, eventually leading to better supply and lower prices



4 Do you expect that the higher cost of steel will cause a significant price advance in products made of steel ?



5 In view of changed cost ratios, do you believe that the steel price increase will result in substantial substitution of other materials in the place of steel ?

6 Do you believe that Congressional investigation of industrial pricing policies is justified ?

WHAT THEY SAY

"The price increase was only on semi-finished billets. As far as we are concerned, this will affect the price of structural steel items, seamless and butt-welded steel tubing about ¼ of 1%."

"Congressional investigations may accomplish a price stabilization effect without resorting to government controls which we all object to."

"In general the advance in prices has been very nominal compared with many other major commodities, and relatively speaking, steel is one of the cheapest items available today."

"The unfavorable publicity they received was certainly not worth the relatively small amount the steel companies will receive as a result of the higher selling price. They have given labor hopes of receiving a higher wage increase than they would have been willing to accept."

"If mills will discontinue reconverting ingots and slabs we believe this would cause a slight reduction in available sheets for a short time. However, it would soon reduce scrap prices."

"If it didn't mean much, why raise prices at all? The steel companies are doing all right."

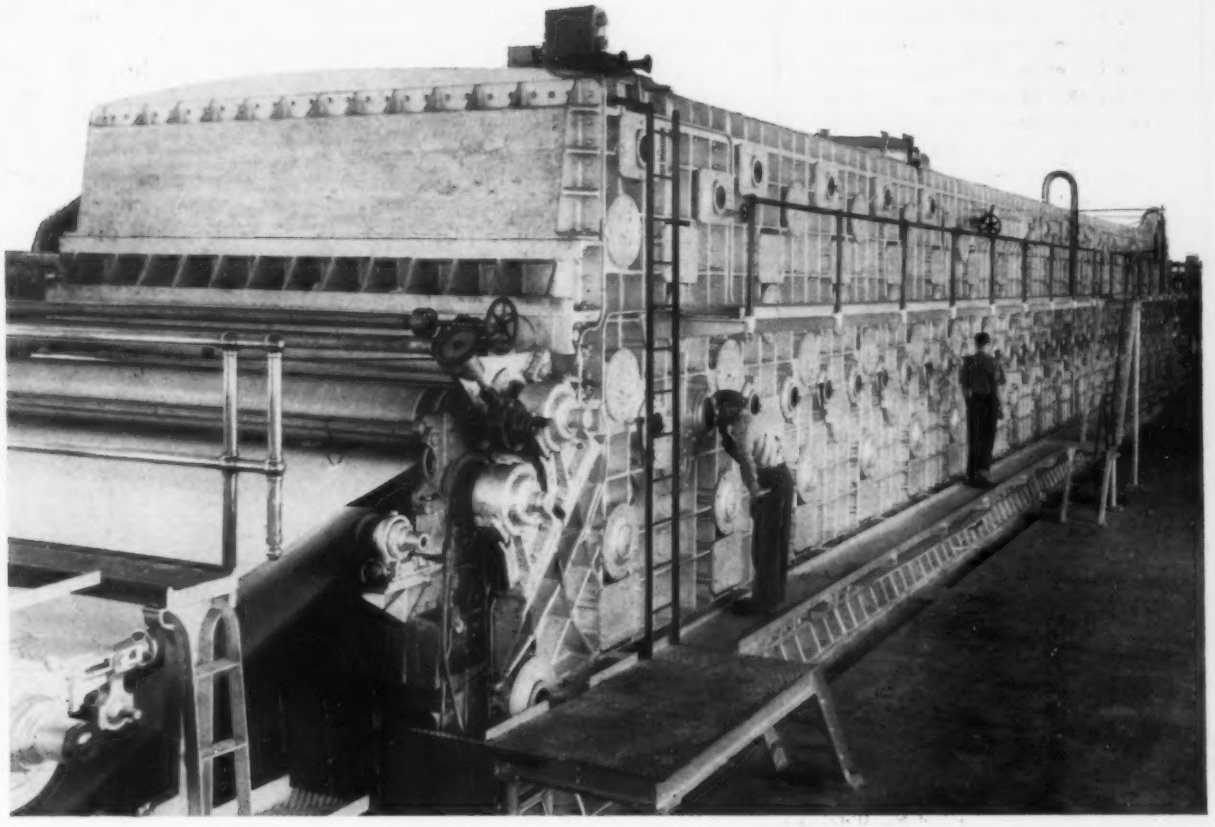
"In view of overall earnings, the increase would have had a better reception if some prices on higher profit items had been reduced at the time of the announcement."

"Tempest in a teapot. Bad timing in announcing. E.R.P. demands for semi-finished shapes may have forced increases prior to allotments."

"Labor always builds up its request for an increase with a well-planned campaign. I recommend this method to the steel industry."

"Black market is at its worst — $200 a ton over market. Why doesn't Congress investigate this operation and not fool around with $5 a ton."

WHAT THE PURCHASING AGENT SHOULD KNOW ABOUT . . . . . PULP



An outline of the principal processes used in the manufacture of pulp for paper, and chief characteristics of the various grades

● ***By Edward M. Engel***

MOST paper is made from wood pulp. Wood species well suited to pulp manufacture are spruce, fir and hemlock. Until quite recently, these species were found abundantly in northern New England and northern New York, Michigan, Wisconsin, and Minnesota; also western Oregon and Washington. However, the gradual depletion of these species in the northeastern states directed capital to the South where there are vast forests of pine extending from eastern Virginia to eastern Texas, suitable for pulping by the kraft process. The trend to the South started about twenty years ago and at present about one half of all the pulp produced in the United States is produced in the South, principally from pine by the kraft proccess.

Since the beginning of the last war much pulp has also been made from poplar, birch, maple, beech, and gum. The pulp from these species imparts bulk, softness, and opacity to paper but lacks strength. This is due to its relatively short fiber length, averaging but slightly over one millimeter. Pulp fibers from the coniferous woods mentioned in the previous paragraph average about three millimeters in length.

The composition of oven dried wood is approximately 55% cellulose, 30% lignin, and 15% sugars and related carbohydrates; or in the case of some pines, as much as 5% fats and resins. Except for the manufacture of ground wood pulp, which is used only in newsprint and other cheap papers where strength and permanence are not required, practically all wood pulp is manufactured by one of three chemical processes: sulphite, soda or kraft. The object of the chemical processes is to dissolve the maximum amount of lignin and other binding materials with the minimum degradation of cellulose.

The tons of pulp produced by the four principal processes in the United States in 1946 were as follows:

Kraft	4,597,331
Sulphite	2,473,715
Ground wood	1,809,187
Soda	466,218

Although nearly all paper is made from wood pulp, there are some exceptions. A few high grades of writing paper are made entirely or partially from white cotton linters or cot-

About the Author —

For the past twenty years the author has been continuously employed in some phase of the pulp and paper industry, including technical control, manufacturing, purchasing and selling. He obtained the bachelor's degree in chemical engineering, pulp and paper division, University of Maine; the master's degree in chemistry at New York University; and has done work toward the doctorate at the Polytechnic Institute of Brooklyn. He is a member of the Technical Association of the Pulp and Paper Industry and of the National Association of Purchasing Agents.

ton cuttings or from light colored rags. The latter are cooked with lime or weak caustic soda in pressure digesters. A few grades of strong specialty such as roofing also use rag pulp, but the rags used receive little or no chemical treatment and can be of any color and from any source.

In addition to the use of rags for pulp, there is a small group of mills in the central midwestern states that use straw for pulp. The straw is digested with lime and the resulting pulp produces a dark, coarse paper that is used almost entirely as the corrugating medium in the manufacture of corrugated paper boxes. Cornstalks and bagasse are also used to a limited extent for pulp production. Bagasse is the residue from sugar cane presses. Its main use now is for wall board, but it offers interesting possibilities also for container board because of its low cost and world wide distribution in the tropic and semi-tropic zones.

Increasing quantities of wood pulp are being used annually for the production of synthetic fibers and films. The consumption of wood pulp for these purposes was 45,000 tons in 1930 and increased to 321,000 tons in 1946. This is called "dissolving pulp" and is usually made from spruce wood by the sulphite process. Other wood species may also be used and present research on a modified kraft process may make the use of hardwoods practicable.

Sulphite Process

The sulphite process[1] was invented in the United States in 1866 by Tilghman but developed in Sweden by Ekman. A flow diagram of the process is shown herewith. Sulphur is burned to produce sulphur dioxide which is cooled and blown through towers containing limerock or dolomite. Water and weak acid circulate through the towers. The resulting "finished cooking acid" is composed of some free sulphur dioxide dissolved in water and some combined with calcium to form calcium bisulphite from which the process gets its name. The usual maximum concentration of this acid is about 6% total SO_2, of which about 5% is "free" SO_2 and 1% is "combined" as calcium bisulphite. The above reactions can be expressed briefly as follows:

$$2SO_2+H_2O+CaCO_3=Ca(HSO_3)_2+CO_2$$

These reactions apply to the "tower system". The "milk of lime system", now almost obsolete, uses slaked lime instead of limestone:

$$CaO+H_2O+{}_2SO_2=Ca(HSO_3)_2$$

Wood, in the form of chips, is subjected to this acid and steam at 70 lbs. to 80 lbs. for nine to twelve hours. The "cook" is then blown, washed and screened. In this process, some of the sulphur dioxide is recovered from the relief gases during the cooking process. About 250 lbs. of sulphur and 350 lbs. of limestone are used per ton of pulp produced.

Up to several years ago, no recovery of chemicals on a large commercial scale was practiced. The dissolved wood constituents and the spent chemicals were all discharged to streams and lakes where they were the source of serious pollution. About two million tons of wood is thus dissolved and lost annually in the United States. Several commercial recovery systems have recently been installed to remedy this appalling economic waste, using a magnesium and an ammonia base instead of calcium.

The sulphite process can produce pulp commercially from all common species of wood except Jack pine and Southern pine, which are too resinous and pitchy. Sulphite pulp mills, therefore, are located only in the North, with the exception of one mill in Fernandina, Florida.

Sulphite pulp, bleached and unbleached, can be used for almost all grades of paper. In the unbleached state it is made into wrapping and "manila" grades of paper, and accounts for 10%-20% of the pulp used in newsprint paper. In the bleached state it is used for book, bond, ledger and the highest grades of white and colored wrapping paper.

As mentioned earlier, sulphite pulp is the pulp that is used almost exclusively for dissolving and reprocessing into man-made textile fibers using the viscose, cellulose acetate, or cuprammonium processes, and transparent films made by the cellulose acetate process or those of the cellophane type, which are regenerated cellulose. The sulphite pulp that is

[1]The spelling "sulphite", as used here, is preferred by the Technical Association of the Pulp and Paper Industry. The American Chemical Society prefers the alternative spelling "sulfite".

Photographs by courtesy of the Pulp Division, Weyerhaeuser Timber Company.

Pulpwood chips pass over an oscillating screen before processing.

used for dissolving is bleached and highly purified and is sold as "alpha cellulose", which competes favorably with cotton linters in the synthetic textile field.

A semi-chemical sulphite process is also used to a limited extent to make a dark, unbleachable grade of pulp suitable only for container board and as the .009" thick corrugating medium for corrugated cartons. In its most commonly used application, this process is confined to the Appalachian region which contains the chestnut trees killed by the great blight about fifteen to thirty years ago. These trees are reduced to chips in the usual manner but an intermediate step is then introduced whereby the tannin is extracted by steam and hot water before the chips are processed by sodium sulphite as the digestant. The tannin is sold to tanneries. No chemical recovery of the spent cooking liquor is attempted.

Soda Process

The soda process was developed by Watt and Burgess in England in 1853, and was first used in the United States in 1880. The flow diagram of this process is practically the same as that for Kraft process, as indicated on the accompanying chart.

The cooking liquor is 11° to 13° Be' caustic soda, about 1000 gallons being required to cook one cord of wood. The cooking liquor is made by adding slaked lime to soda ash in solution:

$$Na_2CO_3+Ca(OH)_2=2NaOH+CaCO_3$$

The precipitated calcium carbonate in some mills is filtered, dried, and used in paper coating; or it may be calcined and slaked for use in the milk of lime sulphite pulp process.

The soda process is particularly adapted to the pulping of poplar and other deciduous woods. These woods are non-resinous and relatively easy to pulp. Soda pulp is invariably bleached and is used extensively in book papers, usually in combination with 50% or more of bleached sulphite. The soda pulp, made from the woods mentioned, has relatively short and bulky fibers and therefore increases the opacity and softness which is desirable in large edition book papers.

The use of the soda process is declining because it is limited to the types of wood mentioned above. By relatively few changes, this process can be changed over to a kraft process which can use all types of wood.

In 1884, Dahl in Germany, in an attempt to reduce costs in the soda process, substituted salt cake for the more expensive soda ash. The resulting pulp was poorer in color but possessed superior strength to the previous soda pulp. Kraft is the German word for strength, from which this pulp got its name. The name sulphate pulp is also applied to this pulp because of the sodium sulphate, or salt cake, which is added as makeup for unrecovered chemicals. The active components of the cooking liquor are caustic soda and sodium sulphide, Na_2S.

The latter is obtained from salt cake in the recovery furnace, in which the following reaction takes place:

$$Na_2SO_4+2C=Na_2S+2CO_2$$

Carbon in the above reaction is available from the organic matter dissolved from the wood. The dissolved organic matter, together with the spent cooking liquor, is known as "black liquor". This is concentrated by evaporation before burning in the furnace. The resulting ash, in addition to Na_2S, is composed mostly of sodium carbonate which is dissolved in water and treated with lime to form the caustic soda mentioned above.

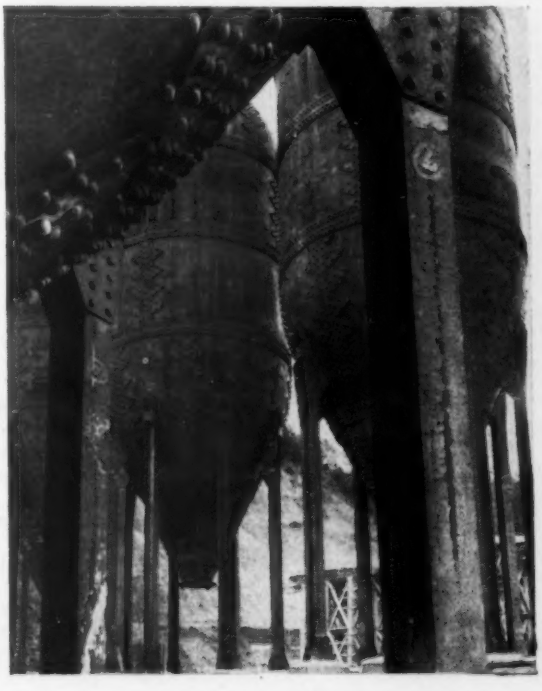
The cooking pressures are slightly higher and the cooking time slightly shorter than with the soda process. In addition to increased strength, the yield of fiber per cord of wood is also better with the sulphite process.

Chemicals are recovered as in the soda process, but about 300 lbs. of salt must be added to the liquor per ton of pulp produced. Some mills have substituted nitre cake for salt cakes, but its use is not common.

The kraft process can be used to produce pulp from all common species of wood but is used most extensively in the South, where its alkalinity adapts it particularly to the pulping of Southern pine and other woods high in pitch and resins. The unbleached kraft pulp is used to produce wrapping, bag, and container grades of paper. Within the last twelve years extensive tonnages of kraft pulp have been bleached and this bleached kraft is comparable in

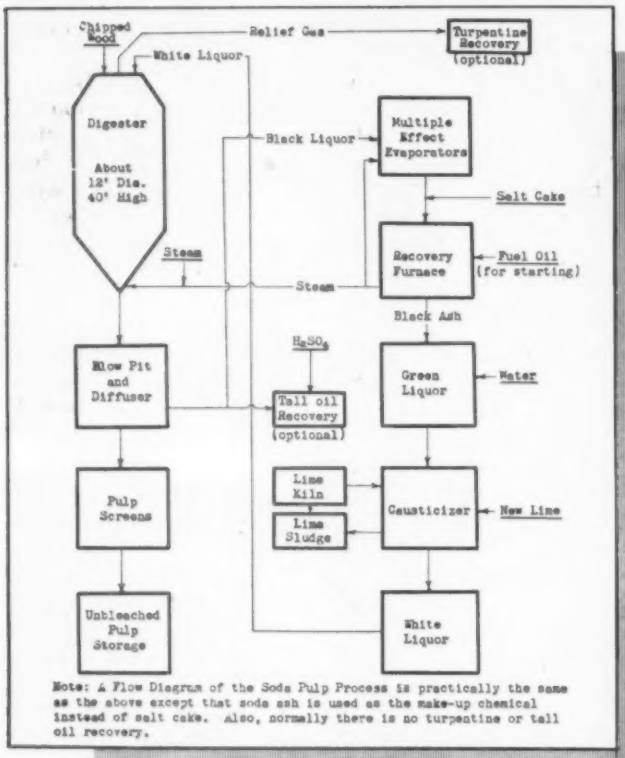
LEFT

A five-foot conveyor belt carries the chips to the surge bin.

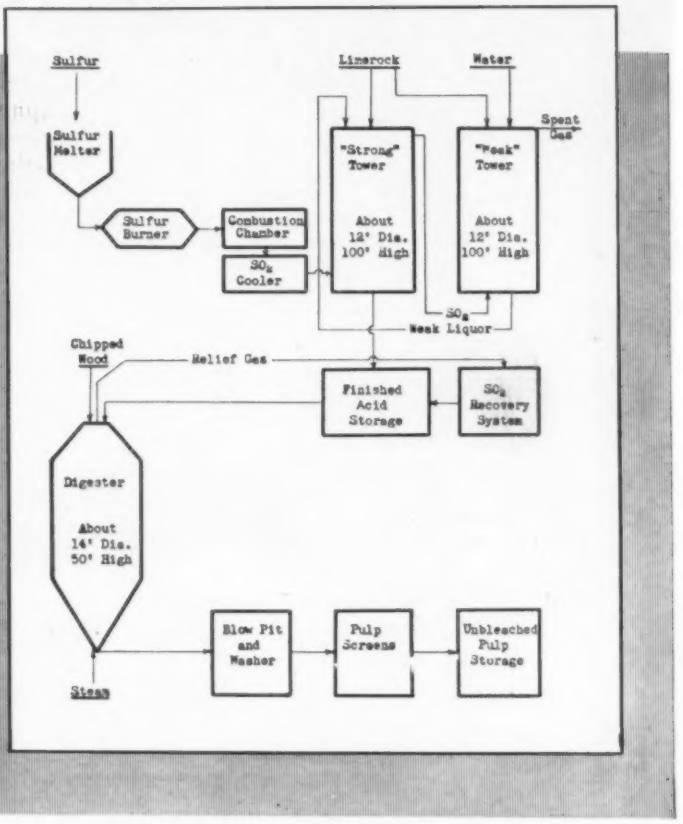


RIGHT

Sulphite pulp digesters (in process of installation). A digester of 14-foot diameter and 50-foot height holds about 21 cords of wood reduced to chips, and 25,000 gallons of cooking liquor; will produce about 11 tons of dry pulp.



Flow Diagram of the Sulphate Pulp Process

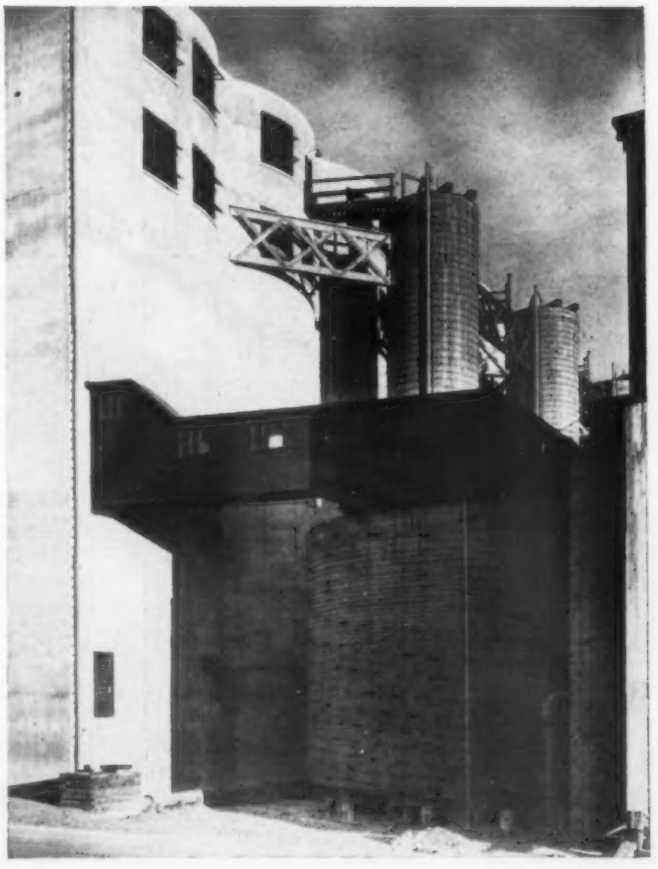


Flow Diagram of the Sulphite Pulp Process

quality and price to bleached sulphite pulp. Each of these grades of pulp, however, has inherent characteristics which makes their indiscriminate interchange undesirable.

The rapid development of the kraft industry in the South in the recent past has been due mainly to the efforts of the U. S. Forest Products Laboratory at Madison, Wisconsin, and to the initiative of several old and well established pulp and paper companies. This should be put on record because, in the popular discussions of the subject, one or a few individuals are occasionally and erroneously given all of the credit for this development.

It is unfortunate that the term "sulphate pulp" was introduced into the kraft pulp nomenclature. To the untrained ear, "sulphate pulp" sounds the same as "sulphite pulp" and many costly misunderstandings have resulted. The term "sulphate pulp" was used as early as 1894 by Little and Griffen in their book, "Chemistry of Paper Making," and originally it meant kraft pulp that had been thoroughly cooked. By 1920, Witham, in his book "Modern Pulp and Paper Making" said that the terms "sulphate" and "kraft" were being used practically interchangeably, and by about 1933, in the pit of the de-



Everett (Wash.) mill of the Pulp Division, Weyerhaeuser Timber Company. The concrete building at left is the digester house. Contents are discharged into the wooden tanks or "blow pits" (right) upon completion of the cooking cycle.

pression, salesmen of Scandinavian kraft were almost unanimously calling it sulphate. By that time interest was being shown in the bleaching of kraft pulp, and whether or not the pulp was thoroughly cooked to make it easy bleaching, it was nearly all called sulphate. Perhaps at some convivial convention there could be organized a "Society for the Prevention of Calling Kraft Sulphate", similar to the "Society for the Prevention of Calling Pullman Porters George."

The paper industry, as all paper buyers know, besides clinging to a highly complex system of basic weights and ream counts, also has many anomalies in its nomenclature. For instance, "patent coated manila" is not patented, coated, nor produced from Manila fiber!

Pulp Bleaching

All pulps that are used to make high-grade white and light-colored papers are bleached. At present this is done almost entirely by any one of a number of possible multi-stage processes.

A typical first stage of a multi-stage process consists of injecting clorine gas directly into pulp of 4% consistency while it is being agitated. The normal amount of chlorine added to the pulp in this first stage is 80 to 120 lbs. of chlorine per ton of pulp on the dry basis. The chlorine causes the light buff color of the unbleached sulphite pulp to change to orange-brown and causes the brown color of unbleached kraft to change to darker brown. This reaction, which takes place within a few minutes, is primarily on the undissolved lignin and proceeds with the liberation of hydrochloric acid. Chlorine is added until the pH is reduced to about 4.0 and agitation is continued for 30 minutes. Toward the end of this period milk of lime is added until the pulp has a pH of 8.5.

An exhaustion stage follows the chlorination stage after the addition of lime. During this stage the pulp is slowly agitated, without the addition of any more chemicals, for one to two hours. After the addition of lime in the previous stage, calcium hypochlorite is formed which causes a true oxidizing bleach to take place which gradually changes the pulp to a lighter color.

The next stage is to wash out the soluble products of chlorination and oxidation and to thicken the pulp to a consistency of about 18%. This is done with an Oliver washer and filter, or similar equipment.

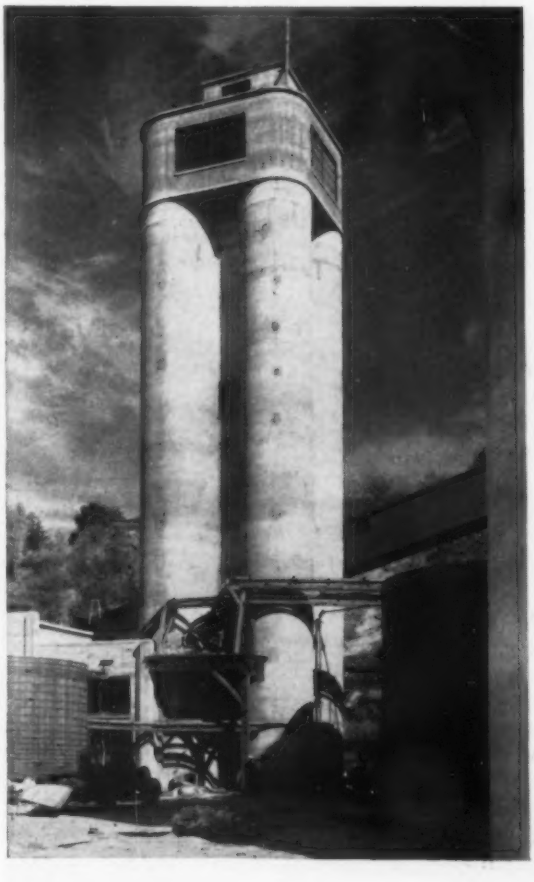
A caustic extraction stage is next introduced for kraft pulp, but is usually omitted for sulphite pulp. This caustic extraction consists of adding 30 to 40 lbs. of caustic soda per ton of pulp which is brought up to 150° F. with live steam and slowly agitated for one to one and one-half hours.

A second washing stage is then introduced to wash out the soluble products of the caustic extraction.

The final bleaching stage is a true oxidizing bleach with pulp at 18% consistency, with calcium hypochlorite. The latter is made by bubbling chlorine gas through milk of lime. The pH of the hypochlorite stage is maintained at 8.0 to 9.0; the time, approximately two to three hours.

At the end of this stage thorough washing again takes place, and particularly for kraft, the pH is adjusted at the end of washing to 6.8 to 7.0 with SO_2 or sulphuric acid in order (1) to prevent the regression of color and (2) to save on alum, if the pulp is to be used to make sized paper.

A development since 1940 is the bleaching of groundwood pulp by a peroxide method, for a grade of printing papers intermediate between newsprint and the better grades of book and magazine papers which normally use bleached sulphite pulps.



LEFT
Acid towers, about 100 feet high, in which cooking acid is made from sulphur, limestone, and water.

RIGHT
Finished pulp, baled for shipment.

LET'S ABOLISH DISCOUNT PRICING

Can it be possible that anyone is satisfied with the outmoded system of chain discount prices?

● ***By W. F. Schaphorst***

THIS writer does not profess to be an accountant, and it may be that he is "sticking out his neck" in taking issue with a custom that seems to be firmly entrenched in many lines of trade. However, he has before him a quotation which states a price, subject to discounts of 20-18-5. He has been trying to match it up with a so-called "discount sheet" that is supposed to solve all these mysteries, but the nearest listing shown is "20-15-5, multiplier .6460". Obviously, this is of no help whatsoever.

Why should a quotation be made with a discount of 20-18-5? Sometimes we see long strings of discounts, much longer than the above. Does the vendor want to make it as difficult as possible to decipher the price? It seems so. Sometimes they are considerate enough to furnish us with a "multiplier", which simplifies the calculation and enables us to forget about 20-18-5. Nevertheless it still puts us to the trouble of going through a mathematical process that definitely belongs in the seller's accounting problem, not in the buyer's. And with hundreds of buyers and potential buyers going through the identical calculation to find out what the seller really means and could have stated plainly in the first case, there is a shocking duplication of effort and possibility of error.

Vendors have their explanations, of course. They argue that in the case of a change from a published price list, they can merely tack on another discount instead of revising and republishing the entire list. That makes sense, but wouldn't it be easy to issue one new all-inclusive discount figure? The buyer is not particularly concerned with the history of a pricing policy. Furthermore, it can easily be misleading, unless the buyer is alert to analyze exactly what the additional discount means. If the price has been previously quoted at a discount of 20-18, and is changed to 20-18-5, the buyer might assume that he is getting an additional 5% discount from the base price. Not at all. He is getting a discount of 5% on the base price less 20-18, or 5% on 65.6%, which amounts to 3.28% from the base price.

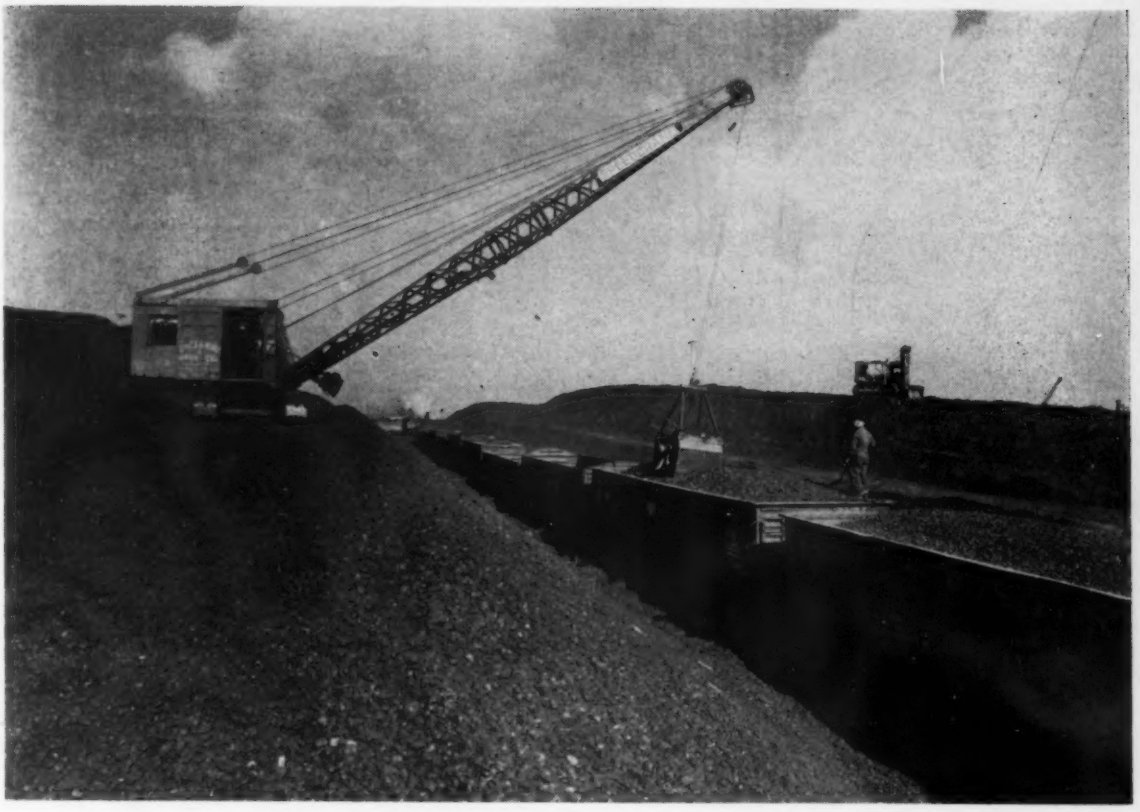
Again, it is explained that the base figure represents a suggested resale price; it may even be displayed in retail or consumer advertising. The chain of discounts represents successive distributor margins—distributor, wholesaler, retailer, etc. How much of the chain gets into particular quotation depends on your classification as a customer. Of course, if there is an agent involved in the transaction, he must get his commission, but there's no reason to bother the buyer with it.

Years ago, the writer was assisting the president of a prominent company in making up a new price schedule. The president would sit and stare out of the window for a while and then jot down another percentage to be added. For example, he might convert the above into "20-18-5-3". The company was just about "on the rocks" when he took over, whereas now it is highly successful, so maybe he knew what he was doing. Nevertheless, the writer wonders.

In the event that some readers do not know the short cut for determining the "multipliers" mentioned above, this is the way it is done: Subtract each of the applicable discounts from 100, and set down the string using these values. Thus, 20-15-5 becomes 80-85-95. Using the new figures as percentages, multiply them all together, and you get 0.80 x 0.85 x 0.95, or 0.6460, as noted in the first paragraph. If the list price for a given article is $100, you merely multiply it by 0.6460, and $64.60 is your price. The order in which the discounts are listed makes no difference in the end result. It is a commonly held fallacy that the larger discount at the beginning of the list, being applied to the largest (original) base, is more advantageous. But a discount of 20-15-5 is neither more or less than one of 5-15-20; they are identical. Try working out the multiplier and see for yourself.

This writer, though, doesn't like that sort of discount at all. He prefers catalogs and quotations that give a definite price per item. It may come out the same in the end, but when there are two or more different ways of expressing the same thing, the simplest way is usually the clearest and best.

COAL SELECTION BASED ON FACTS



More than 100,000 industrial power plants bought more than 187 million tons of coal last year, without the full facts on either their own requirements or the coals available for their use. A central fact-finding bureau for coal users would minimize "trial and error" methods of coal selection, broaden the market, and make substantial money savings.

● ***By Roy Emmert***
Fuel Engineer, Westerlo, N. Y.

INDUSTRIAL coals are currently quoted in the Eastern market at from $3.60 to $6.70 per ton at the mines. The Chicago market shows even a greater price spread, from $3.50 to $7.90. Both indicate the wide variation that different plants pay for their raw B.T.U.'s at the source.

Granted, there are also wide differences in the character of the different coals there represented. The fact still remains that, in a $3.00 range of prices, there are vast opportunities for large money savings from working with the shades and degrees of quality differences that accompany the rise in price from a low of $3.50 per ton, to a high of $7.90.

It is well known, of course, that coal prices are in no way tied to their various costs of production. They are entirely a matter of supply and demand. This has proved true in the past when, to keep tonnage moving, so many mines sold at less than the cost of production that the Guffey law was passed to stop that practice.

With prices thus fluid, a slight preference for one coal creates an overall demand, and consequent derangement of relation between price and value.

How the Practice Grew

If true coal values could be determined by analyses, such a practice could not last. Published analyses would make it possible to correlate B.T.U. costs with price per ton, and better values could easily be found. But that is not the case at all.

Coal's true worth is in its ability to perform to certain standards, with equipment and load conditions that are largely fixed for individual plants. And until there is assurance that such results can be attained, analyses and price have little meaning in terms of value for a particular coal in a particular plant.

Up to now, the only way coals could be proved for a certain plant was for that plant to buy-it-and-try-it. This was a "trial and error" method, in which the tonnage produced for test purposes often was (a) special coal, and threw results askew with regular operation; (b) it was in too small quantity to allow for learning how to handle it in use; (c) the factor of error absorbed

small differences which, applied to the year's coal bill, would have meant sizable dollar savings; or (d) the method was too cumbersome and costly to apply to the market as a whole and all sources of supply.

This method became, and still is common usage, because no better method was developed. It is so much the accepted method that coal is sold, largely in the beginning of new accounts, for "trial" purposes; and many salesmen rely on the hackneyed phrase "The proof of the pudding is in the eating", to close their sales effort.

Money Savings Are Still Present

Smith, of General Motors said, when coal costs were about one-half of what they are today, "Proper coal selecting is the greatest single factor in efficient plant operation." Swain, Editor of *Power*, has said of coal selecting, "It is the most exacting, technical and difficult job of the modern purchasing agent." Harris, of Du Pont, for many years Chairman of the National Association of Purchasing Agents' Fuel Committee, said, long ago, "There is probably no material purchased on so large a scale with so little discrimination as coal."

Finding a coal that will evaporate ½ pound more water will make a 5% saving on fuel in many plants. Coal with a more favorable ash fusion may reduce maintenance cost 5¢ per ton used. And an equally suitable coal, at the same price, with 5% more heat, means 35¢ per ton, or $1750 on 5,000 tons at $7.00 per ton, delivered.

Cases are not exceptional where several of these potential savings are combined in a new coal, and the sum of them exceeds savings to be had from plant changes that would cost thousands of dollars in outlay to make.

That these savings are there to be made is proved by the findings of two prominent engineers that have been previously recorded. Tobey, then of Appalachian Fuels and more recently with Fairmount Coal Bureau, found a plant that used 700 tons of coal daily; they tested 130 different coals, to find 18 that were suitable, and none of which were on an existing acceptable list of 60 coals that had been in use as a buying guide for many years.

Gould, of Fuel Engineering Company, made a survey of 25 plants, and found only one plant that was using its one best coal, at the right price for its quality in that market. It goes without saying, then, that plants where less effort is made to find top values, are seldom getting better results, and that, therefore, most of them could make large money savings, even in a seller's market, if they had a better way to make complete market surveys for their specific requirements.

It is generally acknowledged that good buying saves 10% or more as compared with haphazard buying. Combining the advantages of proper coal selection as described immediately above, with even the low figure given here, and applying it to a 10,000 ton plant, in today's market, would mean a matter of $7,000 yearly. While that is not enough to pay extra dividends on, perhaps, the failure to take these savings is a heck of a spot to be caught in, if management should call for proof of the wisdom with which the year's coal money was spent, more especially since to make that saving called only for better buying, and not plant improvements that cost money.

Plant Size Related to Savings

Reed, of the National Coal Association said recently that plants using 2,000 to 10,000 tons annually are the worst wasters; that their maintenance costs are usually the highest. The reason seems entirely evident; for, while the amounts involved run to $14,000 and $70,000, using the same delivered cost as previously, the personnel is limited, and could hardly be expected to include a coal specialist.

A published survey of buying personnel, compared to buying volume, showed that where ½ million dollars yearly was handled in the purchasing department, there were an average of 3.5 persons employed. How much coal talent would be there represented, do you suppose? Yet, the possible money savings in those plants has been shown to be greater than the cost would be to employ the special training required; the ratio is easily ten to one.

A Better Coal Selecting Method

Galileo said, "What we can measure, we know." Well, there is certainly nothing about a power plant bearing on coal that we cannot measure, and with sufficient accuracy to do a better job of coal buying. Indeed, the most miserable plant in operation, and in spite of itself, has the most important required measures in evidence daily. Any plant that the sheriff doesn't close, has the rudiments upon which a better buying guide can be built. Complete instrumentation is all very fine, but the plant where coal buying is shoddy because of lack of information is plain lazy and incompetent.

Unfortunately past efforts have tended to overshoot the mark. Two momentous efforts by the Coal Committee of the National Association of Purchasing Agents have been exceedingly thorough and far-reaching. But they have not been practical in application where they are needed the most. The authors deserve not only credit for their untiring efforts, but also for the ingenuity of both the results of their work, and the methods used to accomplish that work.

It seems we have been scared into believing the task is almost impossible. We have been told by certain authority that "No formula can be drawn" for the purpose. That was the other extreme from both Bulletin 21, and "Information Sheets For Coal Selecting", referred to above. To say we went "from the ridiculous to the sublime" is no reflection on any of the parties involved. It is, rather, to say that we passed right over the thought that there was an in-between method, wherein duplication of effort could be avoided on the one hand, as is done when outside talent is called in; and breaking the camel's back with the straws of too much detail, on the other hand.

Lack of organized knowledge, indeed almost total lack of usable facts, has been the bane of the coal buyer's job, because acting alone was like eating soup with a fork. He simply got nowhere for the effort he put into it. On both sides of him, with the plant engineer and the coal salesman, there were only crumbs of data where there should have been loaves of facts. There was neither method nor material.

The facts, as proved by years of experience in the field, are that what a given coal will do in one plant it will also do in another plant, with results that are in direct proportion as use conditions are similar or different. What is more, the results in one plant can be projected into the other plant for easy and accurate comparison, without disturbing routine in either plant, or getting in Dutch with the shipper for suspended shipments while new coals are being tried. This has been done hundreds of times, in scores of plants, and with dozens of coals, without error or deviation from expected results.

Complete and continuous market surveys for better values are then a matter of schedule, proportioned to the importance of the item and total tons used. The sum-total of the effort is invariably one of two desir-

(*Please turn to page* 338)

Pages From a Buyer's Notebook

INVENTORY PROFITS

So long as commodity prices are rising, it is obvious that the replacement cost of inventory will be higher than actual cost, and there is a strong temptation to regard the difference as profit when computing inventory valuations. But inventory profits are illusory. They can't be realized until the goods are put to use. Meanwhile, so long as they remain in stock, the old rule of "cost or market, whichever is lower" is the safest basis of valuation.

James S. Knowlson, President of Stewart-Warner Corporation, recently told a conference of his company's distributors: "Don't kid yourself about profits in inventory. You can't spend them, and they may be lost."

This sound advice has a direct bearing on purchasing policies, for the industrial buyer's function is to procure for use, and not to build up inventories for the illusion of profit.

Put into simple terms, it means this: "Don't buy anything you can't use, and buy only when the need is clearly indicated. If there is something you or your customers can use, and if your best judgment tells you that it will cost more next month, buy it now. But if there is any reasonable doubt on either the need or the cost, the gamble isn't worth taking. For inventory losses are not illusory; they are just about the toughest reality that the purchasing agent and his company have to face in making up the final balance sheet."

LOOK BOTH WAYS

Under the business conditions that we optimistically—and nostalgically—refer to as "normal", production schedules are set to match sales quotas. Under conditions of scarcity, schedules must be limited to match the available supply of materials.

People are pretty well agreed that the answer to many of our current economic ills is greater production. That isn't quite as simple as it sounds, for production stands in the middle of the industrial process. Before you produce, you have to get materials, and after you produce there must be an outlet for the product.

A good many companies are in a constant turmoil because they overlook this elementary relationship between purchasing, production, and sales. They go out and oversell, with the result that there is a constant scramble and headache in procurement. Or they buy and manufacture without adequate market research so that there is a constant and unhealthy pressure on sales.

One of the first rules for efficient management and operation of a company is that the planning department should be on speaking terms with both its purchasing and selling departments.

QUALITY CONTROL

One of the questions raised at a recent meeting of quality control engineers was whether a purchase order should carry a clause requiring that goods be produced under approved methods of quality control, as a guarantee of uniform quality standards. In support of this proposal it was pointed out that tax authorities require approved accounting methods, and that effective quality control is the mark of progressive management and the preferred supplier.

The answer given was that such a development in contract practice is probably somewhat in the future. In view of the notable advances and accomplishments in the science of control, it would be rash to predict that such a policy may not eventually come into practice as an adjunct to present purchasing tools of specification and test, though not replacing them. However, the proposal seemed premature at this time.

In a later discussion with purchasing men, the same question was raised, and among a group representing about a dozen companies it was disclosed that in two cases such a clause has actually been incorporated in the order. Both were concerned with precision products, and were experienced in quality control within their own organizations. One of them had found the clause of practical use in buying. The other was still tentative.

A new factor in purchasing technique may be in the making.

PIPE LINE PROBLEM

Now that the pipe lines for many industrial items are filling up, it appears that this situation is not an unmixed blessing. Somebody, it seems, is always in the middle, and this time it is the distributor who finds himself in that uncomfortable position.

Not long ago, the representative of our local supply house called on us, accompanied by the sales manager of a manufacturer whose equipment we had recently purchased. He was putting on the pressure for additional business. Later on, when the local man called alone, we got the whole story.

Lead time on this equipment dropped rather suddenly from 90 days to 30 days. The immediate result was that the distributor had three times his normal quantity of stock on hand, delivered on a standing order, before he had the time or opportunity to adjust his commitments. It amounted to rather a substantial item in itself, and the distributor had a vision of tripled inventory all along the line.

The manufacturer was sympathetic, but declined to accept a return of the goods. The answer, he said, was to go out and sell more. So here he was, helping to move the stock on to the ultimate buyer.

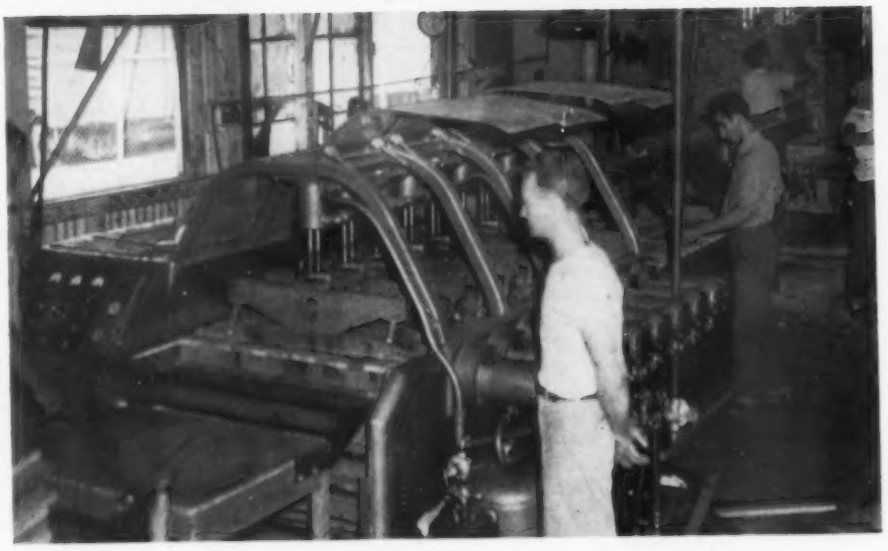
This situation is not unique. Pipe lines of supply are not the same as consumption. They are somebody's inventory, and unless that supply is kept moving there will be a hurry call for some handyman to correct the stoppage before somebody gets hurt.

PURCHASING FOR FURNITURE PRODUCTION

A simple procurement system based on production schedules and unit breakdown of material needs keeps mechanized production lines well supplied

●

By Fred M. Burt



Key units in the mechanized production line have been specially designed and built for the Gillespie shop, such as the automatic dovetailing machine and automatic gluer.

THE Gillespie Furniture Company of Los Angeles manufactures a quality line of furniture including six functional groups for living rooms, dining rooms and bed rooms. The different units that make up these suites keep rolling off the end of the 1200-foot continuous finishing line in uninterrupted flow. Every minute, one of the 42″ x 60″ plywood carrying boards, with its furniture burden, is transferred from the unloading section of the mechanized line, to roll on one of ten gravity lines through the finish dryroom.

To maintain this continuity of flow, it is necessary that never shall there be any material or accessory in short supply. The woods—plywood, softwood, and veneers; the accessories such as bed hooks, pins, pulls, shelf holders, door stops, corner irons, etc.; cotton seat filler, felt, upholstery; plate glass for mirrors; the stains, sealers, lacquers and enamels; the glues and many other items of supply must be on hand to support the production schedule.

The Gillespie Furniture Company was founded by its president, Forrest H. Gillespie in 1919, and engaged in the production of commercial types of furniture until the outbreak of World War II. Associated with him are A. F. MacDougall, vice president, (Gillespie and MacDougall served in the same company of engineers in World War I), and H. C. Lucas, secretary and general production manager; W. M. Anderson is Purchasing Agent, and is also closely concerned with production scheduling.

After the company's special wartime productions were no longer required, the same engineering genius and production know-how that contributed to the war effort, were employed in reconverting for the resumption of furniture manufacture in a highly mechanized and efficient procedure manner. Included in the equipment and new layout, are the

finishing line and two new, Gillespie-designed units; namely, the automatic gluing machine and the automatic dove-tailing machine.

A major part of the wartime production was the manufacture of 310-gal. plywood auxiliary fuel tanks, used to increase the effective flying range of planes, and jettisoned after use of the fuel carried. The Gillespie company was principally responsible for the engineering and production of these tanks, interchangeable on the P-38, P-47 and other fighter planes. They were made of plywood with no metal, and the parts of the three-section outer shell and the ten-bulkhead skeleton were bonded with a plastic glue in hot-plate presses. The tanks only weighed about ½-lb. per gallon of capacity. These wartime developments provided invaluable experience, some phases of which were of great aid in working out present manufacturing procedures.

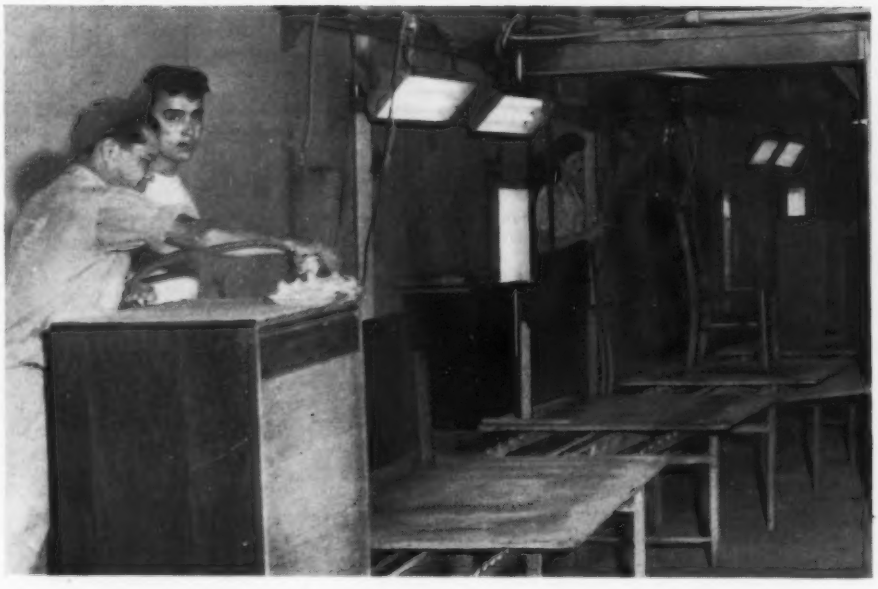
The new designs and finishes that make up the functional groups now offered to the public through hundreds of dealers handling the Gillespie line, are evolved from market research, the opinions of these dealers, Gillespie ideas, and other logical sources. They are end products of many opinions and ideas as to what will best satisfy the ultimate buyers.

The final ideas are converted into specific designs by designer Ray Wigg, and hand made samples are made up. In conferences, a decision is made as to how many of each group will be manufactured each month. Gillespie company problems are detailed, considered and resolved, frequently, by this cooperative method, generally by Gillespie, MacDougall, Lucas and Anderson.

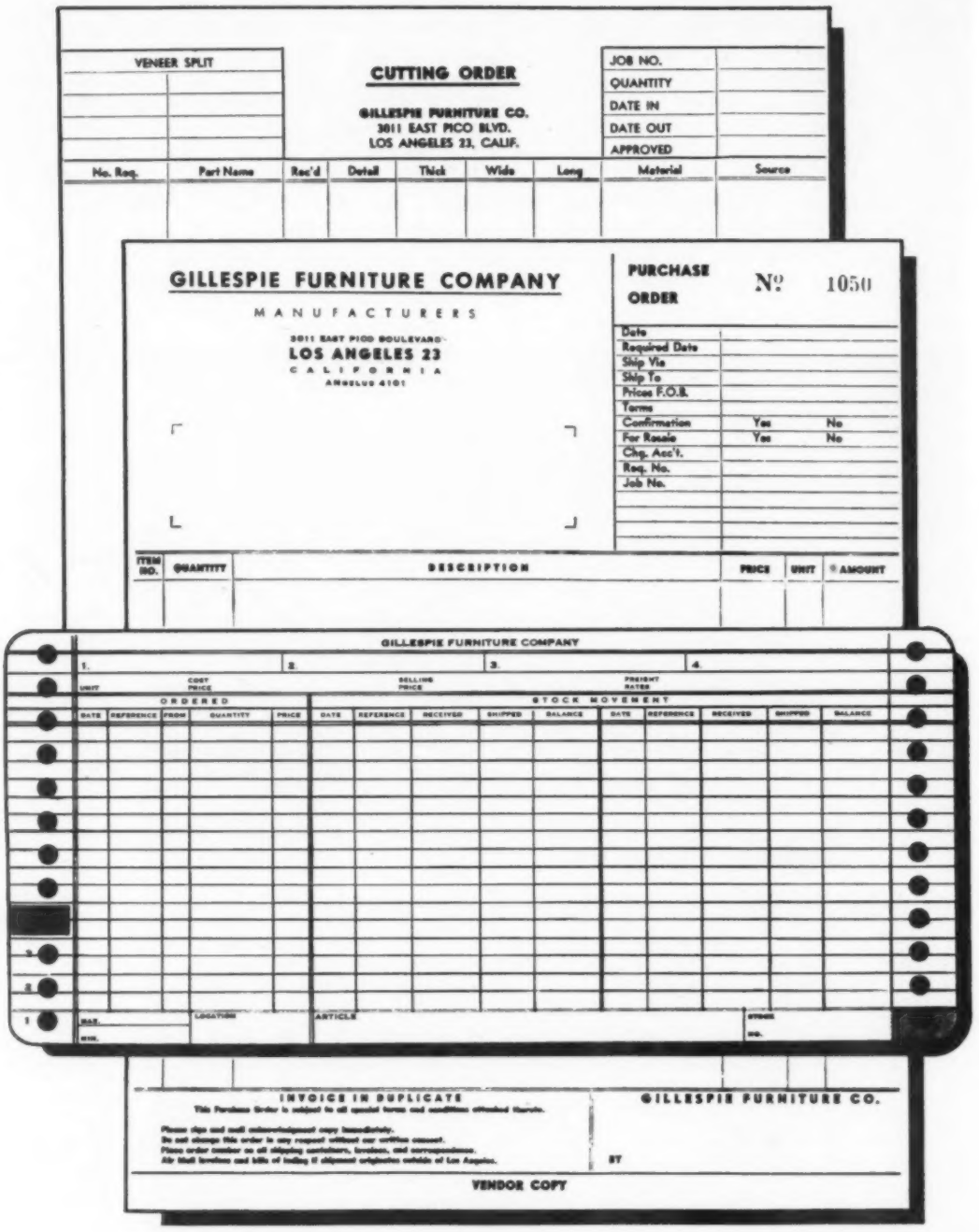
Each group is given a manufacturing job number. Ray Wigg, who is also in charge of inventory, is advised of the number to be manufactured during each half-month period. He makes a group and unit breakdown to determine just what materials and accessories will be required. From these he compiles the twice-monthly cutting orders. These are checked against the stocks of lumber on hand and on order. The lumber, in millions of feet, stock in the nearby lumber yard, is dimension stock cut to size at vendors' mills, and comprises mostly Ponderosa Pine ,California Redwood, and Sitka Spruce. Veneers, cut to size and applied in the veneer mill at another location, are mostly White Oak (rift cut), Fancy Black Walnut, African and Honduras Mahogany.

An overall month's production schedule given to the mill foremen, broken down into days, shows the total number of cuttings per day, in terms of job numbers, wood used (e.g. 104 Oak). The cutting orders are broken down into exact detail. Copies to to the Plant Superintendent, Plywood Department (Veneer Mill), Cut-Off Department (Rough Mill), Finish Mill, Assembly Department, Finishing Department, Shipping (and Receiving) Department, and the original to Purchasing Agent W. M. Anderson. As there are variable numbers of cutting orders for each job number, the first would be listed as, for example, Job No. 100, the next one would be Job No. 100-2, then 100-3, etc. Then comes the quantity on each cutting order and "Date In", when production starts; and "Date Out", the scheduled completion time.

In making up the cutting orders, to check against stocks, Mr. Wiggs refers to his complete file of loose-leaf stock record cards, carrying a detailed running inventory of all materials, accessories, and supplies. He makes notations on Mr. Anderson's copy as to any accessory procurement requirements, which Mr. Anderson considers and then translates into purchase orders. In the matter of lumber purchases, which are items of major expenditure, also of large stocks, Mr. Anderson keeps in such close touch with the situation that he is always cognizant of what is available at all times. In addition, the stock card records provide a refer-



Sanding operations and spray painting follow in close sequence.



Paper work is kept at a minimum. Three simple forms —the cutting order, purchase order, and stock record—serve all necessary purposes.

ence to exact quantities not yet assigned to specific job numbers. Actual purchases of major quantities, and those involving capital expenditures, are generally taken up for consideration by Mr. Gillespie or in conference.

Stains, sealers, lacquers and varnishes are quickly obtained from local sources, all ready for use in 50 and 55 gal. drums. Lacquers and varnishes are compounded to the company's specifications due to requirements of solid content and specified flash (drying) time for continuous conveyor finishing line operation.

For mirrors, plate glass sheets are purchased in indicated sizes. These are cut to mirror size, inspected in a dark room for defects, washed, given a stannous chloride rinse on one side, and then coated on that side with the pouring on of a silver solution. Sugar and acid additions promote precipitation. Water is drained off, followed by a chamois rub-down, drying and shellac coating. After another washing and edging on a steel, horizontal grinding wheel, the mirrors are beveled and edged on special machines, to be ready for use.

No formal purchase requisitions are used by any department. The notations on the cutting orders by Mr. Wigg take the place of requisitions in the production phase. Maintenance Foreman Charles Franzen obtains supplies for the needs of his department, including automotive supplies, by the use of inter-office memos, sent to Mr. Anderson. The same applies to other departments on certain minor items, such as the memos from Auditor Williams for office supplies not already provided for by Mr. Anderson.

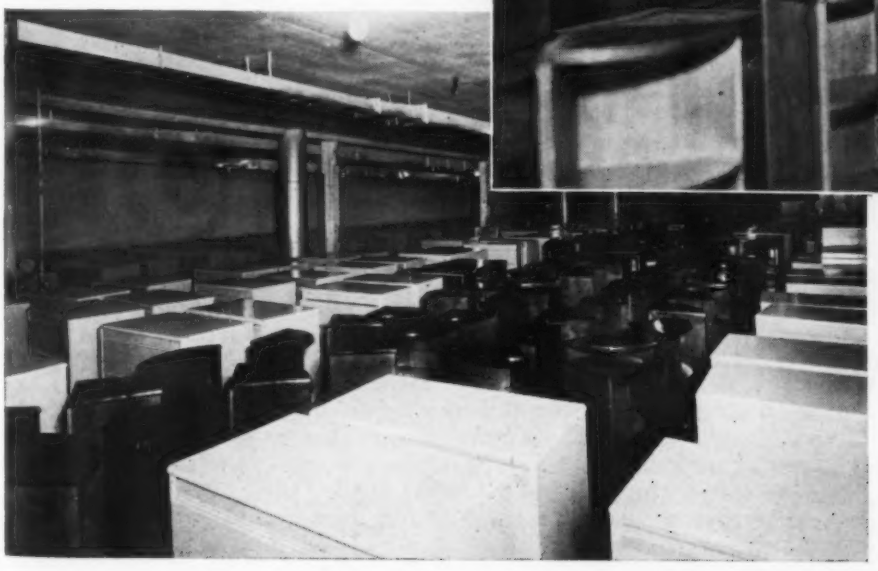
The pattern of operation of this procurement and stock-keeping system is that of substituting a continuing knowledge of all that goes on, with close contacts all over the place, for a lot of systematized paper work that would hardly justify itself under the present set-up. The shop orders

and bills of material do double duty in defining the purchase requirements. Mr. Anderson is not kept divorced from such pertinent information as is often the case (sometimes of necessity) with many purchasing departments. The range of his daily duties and responsibilities, extends considerably further than simply acting as Purchasing Agent. The overall impression gained by this writer, was that of a very close-knit executive organization, ready to immediately consider and talk out any problems or differences as they arise.

In addition to the six-copy purchase order, Mr. Anderson has an extra (orange) copy which he uses to pencil on the data that his stenographer uses in making out the formal order. After the order is checked against the orange copy, the latter is discarded as of no further value.

The copies of the P. O. are rounted as follows—(1) white, with (2) tissue, to the vendor as the order and acknowledgment copy; (3) yellow, Accounting copy, to Invoice Clerk; (4) blue, Receiving Inspection copy, which is used by the receiving department to check in and inspect shipments, after which it goes, also, to the Invoice Clerk with the shipping or delivery tickets, and is finally filed with other pertinent papers covering the transaction; (5) blue tissue, Purchasing file copy, filed alphabetically by vendors' names; and (6) pink, Cost Accounting copy to stock man Wigg, for entry on stock records and use in cost accumulation against the different manufacturing jobs. Invoices come to Mr. Anderson for payment approval, after checking against receiving records for accuracy.

Mechanical work conveyors keep the furniture moving steadily through successive stages of manufacture.



The final step brings the furniture through an 80-foot controlled heat drying oven and into the finish dryroom.

Management doesn't always realize the part that purchasing plays in making possible a company's steady and profitable operation

NO SALE WITHOUT A PURCHASE

By Alfred Newlander

A GREAT deal has been written about salesmanship, and relatively little about purchasing. What the writers on salesmanship have failed to appreciate is that the development of selling science is, to a considerable extent, the result of the steady advance in the science and art of buying. Until recently, the only recognition of any connection between the two was in the old saying, "Well bought is half sold." That in itself put the emphasis again on sales.

It is obvious that every transaction is both a sale and a purchase. The financial sections of our newspapers, in reporting daily transactions in stocks and bonds, show the number of "sales". These could just as well, and just as accurately, be shown as "purchases", for there cannot be a sale without a purchase. The realization of this fact might affect some people in their purchase or sale of securities.

Time was when a salesman walked into an office and carried away an order on the strength of his personality and a few persuasive comments about his goods. In those days, the purchasing agent was presumed to be a person who warded off salesmen and played one seller against another, and successful buying was regarded as a matter of shrewd trading. At first the owner did his own buying, but as the business grew he found that he needed assistance. The next step was for department heads to buy the materials used in their several departments, but in time this arrangement was also outgrown. When, of necessity, the buying was later consolidated into a separate and specialized purchasing department, it was a long while before business generally realized that a special sort of skill went along with the buying assignment, beyond mere shrewdness or trading ability, and that purchasing authority was necessary to insure the best purchasing performance.

Technical knowledge about materials is recognized as a great advantage in buying, but technical knowledge in itself will not develop a successful buyer. A buyer must have the commercial instinct, and a keen sense of values. And as in any other profession, common sense is the most important requisite of a successful purchasing agent. A prominent engineer once testified in court that success in engineering is but 5% dependent upon technical training. Without that technical training, one cannot be an engineer, but 95% of his success depends on common sense in the application of that training. This statement is not limited to engineering. Certainly it is true of purchasing.

The purchasing agent occupies a unique position. His work keeps him in closer contact with all the departments of his plant than is the case with any other one department. At the same time, he is in contact with salesmen and representatives of other companies, his suppliers, and he is able to learn from them and advise those in his own organization about changes and new developments.

"Well bought" does not always mean that goods are bought at the lowest price. The higher priced article is often the cheapest in the long run. Nor is the highest quality always the best for the particular use. A higher priced article may not be nearly as serviceable as one of a much lower price. The suitability of the article for the purpose for which it is to be used must be the first consideration. And the cost of labor of installing or fabricating a part must be known. It may be that a part costing twice as much may not last twice as long as the cheaper part, but the cost of the labor involved in its use may be such that the higher priced item should be used.

Since all departments of a company ought to be working together as a team, it is impossible to say which one of them is the most important. A railroad president once said that his stock claim agent seemed to be under the impression that the railroad was organized, built, and operated solely for the purpose of killing livestock so that he could adjust the claims. There is no harm in each branch of the organization taking a high view of the importance of its own particular function, so long as it does not forget that there are others equally essential on the team, and does not take itself too seriously.

However, in many organizations, this matter of emphasis has been permitted to get out of balance. The sales department brings in the money; therefore it is to be coddled. The purchasing department spends the money; therefore it is to be restrained. However, it is not uncommon to find purchasing departments that have so well timed their purchases of raw materials that they are directly responsible for a greater share of the profit than accrues from manufacturing and sales. It might even be the case that a greater immediate profit might be made by reselling the materials rather than converting them into finished goods. Of course this is not done. The manufacturer knows that to stay in business for an extended time, his job is to manufacture and sell; that's what the goods were purchased for. He is not in business for the purpose of speculating in raw materials and he is not primarily interested in inventory profits. Naturally, he must take the replacement cost into consideration, and must retain the benefit of favorable purchases just as he must sometimes stand the burden of unfavorable purchases.

The scientific purchasing department is a comparatively new factor in business organizations. There never was a more opportune time for manufacturers to strengthen their purchasing departments. Much has been learned during the war that should be of great help to every manufacturer, and much of this has come through purchasing agents who saw and seized the opportunity for quality improvement and end-cost reduction as a part of their procurement responsibility.

And there never was a more opportune time for cultivating and increasing the good will of suppliers toward the company. Now is the time when favorable connections may be made, and old relationships strengthened, that will inure to the company's lasting advantage.

WHAT MANAGEMENT EXPECTS OF PURCHASING

Management looks to the purchasing department to do its share toward smooth and economical operation, to participate in company councils, and to train and develop good men in line for positions of top executive responsibility.

●

By George L. Meyer, Jr.

Vice President
Stewart-Warner Corporation
Chicago

MANAGEMENT'S job is, basically, to produce a satisfactory profit with the facilities at its command. Many things are necessary to accomplish this result, but we are concerned here only with what it expects of purchasing. To produce competitively and sell its product profitably, it must purchase properly and then use plant, equipment, materials and supplies.

Historically, in the past, when the majority of business activity was under the control of owner-managers, the function of purchasing agent, factory superintendent and controller were usually vested in one, or possibly two persons. As business expanded and the demands of each division grew, it became physically impossible for these few individuals to perform all of these functions. As a matter of fact, in my own company, almost forty years ago, the manager of our company said to our superintendent, who was supervising the large number of 85 people (now grown to more than 10,000), that he felt the superintendent was too busy to run his plant and do the buying as well, and that he was appointing Mr. Meyer as purchasing clerk. Our superintendent demanded, "What's a purchasing clerk? What does Meyer know about buying what we need?" The manager answered, "He probably doesn't know much, if anything, about it, but we hope he will learn."

Many other companies, large or small, found it necessary to do the same thing. Thus, the function of purchasing as a separate profession was established. All purchasing agents recognize—and most managements do likewise—that one of the most important of the various activities of modern business involves suitable procurement of materials for production or for resale.

Cost and Service

Briefly, management expects its purchasing department to procure the materials needed (and no more), of the correct quality, at the right price, and to have them at hand on time. By the right price, I mean one which takes into consideration the end use, suitable quality, a reliable source, and a purchase price that results in the lowest ultimate unit cost for the article purchased. In order to arrive at the right price, one must necessarily consider the cost of fabricating such materials in the user's plant. Management expects the purchasing agent to weigh all these factors, and recognizes that a true cost includes many factors beyond the original price paid. The price must be reasonable and competitive, and compare favorably with what other buyers are paying for the same or similar materials.

Keeping the good will of your suppliers so that your company is not caught short in times of scarcity is another management requirement. Sharp or tricky practices, and the unwillingness to treat a vendor's representatives fairly, can kick back very quickly. In many instances this has meant the difference between full and part production, and has often retarded a company's growth.

We all know and will remember those companies who have taken care of us during the last few hectic years. We are now in a period of change. One of the important responsibilities of purchasing is the careful evaluation and comparison of services between your old and new sources. Remember that every period of active prosperity ends with some sort of a let-down, but such periods are in turn followed by periods of better business, increased demand, and difficulty in getting deliveries. Before you discard an old source who, because of conditions beyond his control, could not give you everything you wanted during the past few years, think twice. Be sure that the new source did not take your business because it was temporarily more attractive, at the expense of an old customer, who really should have had his capacity. A good deal of that has happened. Finally, use good judgment in determining your plan of action. Don't be arbitrary and throw out your old source who, over a period of years, has served you well and is ready to serve you again. Sound management, I know, subscribes to this sort of thinking.

Most of the major contacts made by every company are either through the sales or purchasing departments. Management expects its representatives in the purchasing department to maintain these contacts in a manner reflecting the best principles of business practices and integrity. There is no escaping the fact that a purchasing department that is not dedicated to these principles can earn a very bad name for the company it represents.

Smart management realizes that its purchasing department, headed by a capable man and staff, and through its numerous contacts, continuously has its finger on the pulse of market conditions. They appreciate the help which this available knowledge can be in establishing company policies and in evaluating the company's position with respect to conditions in general.

Every new product is the result of

Address at the First Annual Purchasing Conference of District 4, Indianapolis, February 13, 1948.

a series of compromises between engineering ideals, production problems, sales possibilities, and procurement costs. Management certainly expects purchasing to occupy an advisory position of equal stature with these other departments.

Interdepartmental Cooperation

The closest cooperation must be maintained with the product engineering department. This department, as a rule, is prone to develop the need for something special—some special size or special sort of material. Management expects the purchasing agent to go over preliminary specifications and designs with a fine tooth comb in an effort to change materials or parts which are special or different, to those which are standard. In our own company we recently found, upon close study by the purchasing department, that the number of different designs of similar parts could be substantially reduced. Consequently, with fewer different designs, the quantities of a given design to be made or purchased could be increased greatly.

Management expects its purchasing department to sit in on meetings which establish future sales programs. Before a sales campaign or a production schedule can be properly released, information must be had from the purchasing department as to costs of materials and deliveries which can be obtained. The wide-awake and on-the-job purchasing agent should have done a great deal of preliminary research work in developing sources and prices. Through no other source can management get this necessary aid in planning their programs. Under the competitive conditions of today and tomorrow, this cooperation may spell the difference between profitable and unprofitable operations.

Management expects its purchasing department to work hand in hand with its production department in smoothing the way for an uninterrupted schedule. The production scheduling group must be constantly aware of the availability of materials, lead times, economical quantities to schedule, etc. If there is a mutual respect and understanding between these groups, management can be assured that the company will realize the smooth operations that are so vital to production efficiency.

When prices change rapidly, it is essential that management be continuously informed on such changes. Where but few basic materials are used, management usually knows of such changes as quickly as does the purchasing department. However, where a major portion of purchases may be fabricated items which are not regularly quoted in the trade press, it is obvious that such information can come regularly only from the purchasing department. It should be required that such changes, where they seriously affect the cost of a product, be passed along to all interested departments. It is extremely important that this information be passed along without delay.

Other Responsibilities

Management expects its purchasing agent to interview the salesmen who call. This remark might seem almost facetious, but I still believe there are many purchasing agents who are too prone to refuse to see the men who call upon them. Remember that the salesman also has a job to do; his company expects him to present and sell his product. If the purchasing agent won't see him, he may well call upon the engineering department, factory maintenance department, or perhaps some member of the sales department. What particular back door he uses, if the purchasing agent won't see him, depends on the product he has to offer. We have all known cases where a purchasing agent has complained about a salesman going to some department other than his; this may have been due entirely to a turn-down in the purchasing department. And remember that your company also has salesmen out calling on purchasing agents. If they can't sell your product, your own job may be in jeopardy.

In many companies the purchasing agent is in charge of stores. Whether he is or not, he very definitely has a responsibility for the size of the inventory being carried. Speaking for management, I cannot emphasize too strongly the need for watching your inventories. You always get plenty of hell when your factory is short of some item that ties up production. But you will be criticized even more severely as business volume moves down and you are caught with a large inventory.

In some companies the follow-up of purchase orders is in the hands of the production control department, but management certainly holds the purchasing department responsible for non-delivery of materials and supplies on order.

It is the responsibility of management to see that the purchasing department is advised of requirements promptly enough so that materials may be ordered on time. However, when to place an order and when not to place an order is clearly a matter of judgment to be exercised by purchasing. My own opinion is that nothing should be purchased to meet requirements before it is necessary to do so. In the case of a change in schedule, particularly when an operating schedule is reduced, it is a lot simpler to change the date on an open purchase requisition than to change the delivery date or effect a cancellation of an order placed.

A word might be said about management's view of speculative buying. Speculative purchases, as such, should be frowned upon. However, there are times when a purchase, particularly of basic commodities, can be made to good advantage and reflect the good judgment of the purchasing department. Here management expects the purchasing agent to keep them informed, and to know before the commitment is made that both are in accord and how the obligation will affect the company's position.

Reports to Management

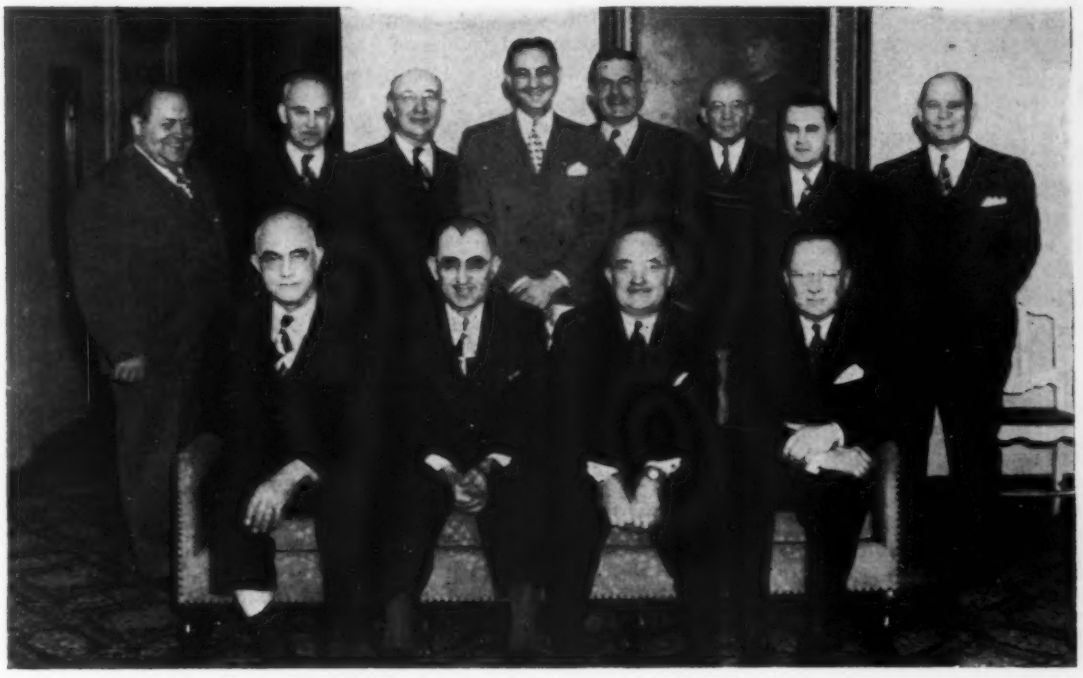
The reports expected by management vary with individual companies. I believe that every purchasing department should regularly turn over to management a statement of its forward commitments. In one of the plants reporting to me, our purchasing agent reviews with the plant manager once a week our metal inventories and commitments. In another of our plants, this is done monthly.

Purchasing agents should, particularly, submit to management a report of inventory turnover; a report of the costs of operating the department, accompanied by a review of the cost savings; a report, at intervals of perhaps twice a year, and particularly on basic materials, comparing the cost of the company's inventory and commitments to the current market on such materials.

Management expects the purchasing department—as with every other department in the organization—to train and develop good men in order that it may furnish candidates for executive posts.

I have said nothing about the basic fundamentals required in members of the purchasing department, such as honesty, integrity, initiative, resourcefulness, etc. These are of course so fundamental they need no elaboration. The proper management of the department and the keeping of good records are also matters that are accepted practice in any phase of a business organization.

INDIANAPOLIS ASSOCIATION IS HOST TO DISTRICT 4 CONFERENCE



Distinguished Guests — the National Executive Committee of N.A.P.A. held its midyear session at the Columbia Club, Indianapolis, to coincide with the conference schedule.

Commodity sessions feature practical and diversified program at two day conference and exhibit; national officers are present

● ***By George E. Henry***

THE First Annual Conference of Purchasing Agents of the Fourth District of the National Association of Purchasing Agents was held at the Severin Hotel, Indianapolis, Ind., February 13 and 14th, under the auspices of the Purchasing Agents Association of Indianapolis.

While serving as host for the Conference delegates from the ten Indiana and Michigan associations that constitute the Fourth District of the National body, the Indianapolis group also entertained the members of the Executive Committee of the N.A.P.A., who convened at the Columbia Club in Indianapolis on those dates. Of outstanding interest on the Executive Committee agenda was the admission of four new Associations to N.A.P.A. membership, these being the Eastern Indiana, Erie (Pa.), Honolulu, and Jackson (Miss.) groups, with a combined membership of 150 purchasing agents, bringing the total N.A.P.A. roster to a new high of 11,300 members.

At the same time, the first postwar Indiana Industrial Show sponsored by the Indianapolis Association was in progress, having been opened two days prior to the Conference dates. The Industrial Show was held in the Manufacturers Building at the State Fair Ground, drawing a record attendance of more than 50,000.

The Conference was featured by an excellent diversified program on current topics and included talks by President Garnet T. Dickson and Secretary George Renard of the National Association, along with speakers on steel, castings, coal and coke, transportation, copper and brass, containers, paper, and management relationships.

The delegates were told that the transportation situation, the scrap market situation, and the investment market would continue to hamper steel production unless material improvements took place; that they could anticipate increased prices for gray iron castings; that there would be no break in coal prices; that a general price increase may be looked for in the glass container field though the supply situation is easing up; that prices of set-up boxes and cartons will continue to be high by 1940 standards and that the average consumer can look forward to decreased costs only to the extent of getting their packages made out of standard grades and basic priced materials; that the paper container industry will be able to cope with demand; and all types of bag paper seem to be in greater demand than the mill capacity; that the supply potentialities in the cotton bag field are rising under free markets; and that statistically the U. S. burlap bag supply position is satisfactory; also, Kraft paper will be difficult to get for quite a while.

Statement was made that all of the standard basic chemicals would remain tight for the first half of the year; and that there should be sufficient copper available during the coming year.

All of the conference meetings, and the annual banquet at which Dr.

L. S. Hamaker, Republic Steel Corp., reports unbalance in steel industry.

Robert S. Hartman, Department of Philosophy, Wooster College, spoke on Profit-Sharing Industries, were held in the Severin Hotel.

The Conference was formally called to order on Friday morning by Oren H. Grant, General Conference Chairman, and Purchasing Agent for the Indiana Bell Telephone Company. A. N. Phillips, Fourth District Vice President, presided. Mr. Phillips is Purchasing Agent for the South Wind Division of Stewart-Warner Corp., at Indianapolis.

The guests were welcomed to Indianapolis by Mayor Al Feeney, and by E. Wayne Allen, Diamond Chain Co., President of the Indianapolis Association.

National President Garnet T. Dickson, of Toronto, was the first of the Conference speakers, and in his opening remarks he commended the Conference committees upon the excellent program that they had so efficiently arranged. Continuing he said:

"In the past seven or eight years the procurement function has been a most difficult one, and we in the profession are still with our shoulders to the wheel. We face shortages, gray markets, demands for price control and rationing, and, in contrast, the worst break in commodity futures we have ever known. This latter is definitely a welcome occurrence, I believe, as it can be a corrective factor in our inflationary trend.

"With our still unsaturated demand and extensive purchasing power it can indicate a correction and a healthy one, but hardly a 'bust'. Mass psychology, however, exerts a tremendous influence, and only by close study and application can we purchasing agents contribute our share in management."

Steel

L. S. Hamaker, assistant general manager of sales, Republic Steel Corp., Cleveland, Ohio, was next introduced, presenting a paper on "The Outlook for Steel". Mr. Hamaker declared that Republic does not see eye to eye with some of its contemporaries in the steel business who seem to feel that the industry is nearing a balance between supply and demand. The new steel capacity which is coming into operation cannot become fully effective unless the situation involving ore transport, scrap, and the investment market, is materially improved. He said that current conditions in steel are likely to last for quite a while. He also referred to the dwindling Mesabi Range ore supplies, the development of the taconite industry as an ore source, and the potentialities of foreign iron ore sources.

Gray Iron Castings

Wm. J. Price, vice president of the Atlas Foundry Co., Marion, Indiana, in the course of an interesting talk on gray iron castings stressed the need for high grade patterns, the desirability of furnishing suppliers with casting weight to assure dependable quotations, and also the importance of buyers covering their patterns with insurance that would afford protection in the hands of any supplier. He said that the price of castings is bound to go up in the near future.

Mr. Price stated that there are about 2600 gray iron foundries in the United States, and that 55% of them are located in the eight industrial states of Pennsylvania, Ohio, Illinois, Michigan, New York, California, Indiana, and Wisconsin. About 5% of the foundries have sales of one million dollars or more, and account for a third of the total sales, indicating that for those industries who use large amounts of castings in production quantities, the possible sources of supply are somewhat limited.

Commenting upon the matter of foundry responsibility for defective castings, he said: "The foundry assumes responsibility for replacement of defective castings, but does not assume responsibility for machine work, welding, labor charges, or other losses or damages. This is as it should be. If the foundryman had to stand these charges they would soon become a regular part of his cost or overhead and would be figured in the price of the casting. The buyer should not overlook that he can pay a little better price to the foundry that produces few defective castings.

"Second, the foundry is not responsible for loss or damage to patterns by fire, etc. These patterns are your property and you should cover them with proper insurance. If the foundry attempted to cover the patterns it would have to be by special endorsement, as they are not the property of the foundry.

"Third, more attention should be given to the matter of casting weights and proper pattern description. If you send a foundry a blue print and advise that you have a metal pattern and core box, the foundry is not in a position to give you an intelligent quotation. If possible always give the exact weight or have your engineering department estimate a weight, and then each foundry you ask for a quotation will be quoting on the same basis. Give an accurate pattern description, size of flask, pieces to the mold, number of cores to the box, etc., and information about special equipment such as driers, jigs, etc. This assures that each foundry is quoting on the same basis and if there is a little variation in weight it can be adjusted up or down at a fixed price per pound. At present a fair figure is four cents. This represents the approximate cost of metal at the spout and is about the only variable that would exist as all the other costs have been figured.

High Grade Patterns

"Too many casting buyers, and unfortunately quite a few foundrymen seem to regard patterns as a necessary evil in obtaining castings. In many cases high grade patterns will save the buyer and the foundry a considerable amount of money if there is a long production run.

"Good judgment must be exercised in the purchase of patterns, and as a general rule the best equipment you can buy usually makes for the lowest ultimate cost to the purchaser. It is a good idea to let the foundry that will make the castings furnish the patterns for it will design them to suit its own practices and the result is generally superior. In some cases, buyers do not own all of the special equipment required, such as core driers, jigs and other fixtures, whereas a core drier is just as necessary in the production of a casting as the pattern or core box, and it should be purchased as a part of the equipment. Otherwise the casting

buyer is not in position to move the patterns to another foundry should it be desirable to do so.

Price and Other Prospects

"For the year 1947, the ferrous industry produced one ton of castings for every four tons of rolled steel in all its form. About 83% of these ferrous castings were gray iron, the rest malleable and steel. It behooves those firms who use both rolled steel products and castings to have some regard for the foundry industry or otherwise they may find themselves with steel supplies but no castings.

"The material outlook in the foundry industry for the year 1948 is anything but promising. There is an acute shortage of both pig iron and scrap, and the cast scrap situation in the Middle-West is much worse than the steel scrap situation. In pre-war times there normally was a reserve of four to five million tons of iron and steel scrap. Today the reserve is less than half that amount, with no prospect for improvement, plus an increased demand over the prewar period.

"Now as to casting prices: In my opinion they are bound to go up in the very near future. In recent months there have been two or three increases in the price of pig iron and coke. Steel scrap prices have increased about $15 per ton and are moving higher. Cast scrap prices are now around $70 a net ton which is at least $25 a ton above a good grade of pig iron. When the foundryman is forced to buy alloying materials and use two or three times his normal volume of scrap at today's prices, there is only one answer! He either gets more for his castings or he goes broke. You don't want him to go broke and you do want your castings, so the price is going up. Just what the increase will be I am not prepared to say."

The Coal Situation

O. L. Scales, vice president of the Enos Coal Company, Indianapolis, and president of the Indiana Coal and Trade Association, presented a paper on the solid fuel situation. The United States Bureau of Mines' estimate of stockpiles as of December 1st was around 50,000,000 tons, he said. Consumption exceeded production in December to the extent of approximately two days' consumption so that by January 1st the stocks in the hands of the principal industries were about as follows:

Electric power utilities	62 days
Coke ovens	34 days
Steel and rolling mills	32 days
Cement mills	46 days
Other industries	42 days
Railroads	22 days
Retail dealers	6 days

for an average of approximately 31 days' supply of coal in storage.

"Thirty days' storage in the hands of American coal consumers is sufficient to protect us from the development of an immediate crisis with solid fuel such as is being experienced with oil, but it is quite insufficient to protect us against the forthcoming events in our industry", he said. "Current heavy consumption is likely to prevent any additions to storage of a substantial amount between now and April 1st."

Mr. Scales stated that the present physical condition of the coal mines would permit, through continuous operation with a full car supply, the production of 650 to 675 million tons in a calendar year. He emphasized that one of the major problems confronting the industry today is insufficient car supply. During the past year innumerable days at many mines have been lost because of lack of cars, which now in some districts is responsible for reduction of 30 to 35% in production capacity.

Speaking on the labor situation in the coal industry, Mr. Scales characterized the mine workers as the "aristocrats of American labor". Rumors now rife, he said, indicate among other things possible demand of $100 monthly pension for miners who have attained 60 years of age, and other welfare costs. It is reputed the program would require an increase of 30 to 40¢ per ton in the royalty payments, and "in addition to this increase in the royalty we are most likely to be met with demands for increased pay for shorter hours."

In conclusion, Mr. Scales stated: "I expect no break in coal market prices. On the contrary it is my opinion that renewed contracts will more nearly approach the present level of open market sales by responsible coal companies. Obviously, this is a guess, but I shall expect a set of conditions where when the present expiring industrial coal contracts are renewed, the level of prices on these contracts will be approximately 25¢ per ton higher than the present level, plus whatever increases result from changes in the present contract with the United Mine Workers."

The morning session was concluded with a short talk on "Business Aspects for 1948" by Dr. M. O. Ross, president of Butler University, Indianapolis.

Discussion Groups

The afternoon of Friday the 13th was given over to discussion group meetings on containers, petroleum products, paper and industrial chemicals.

The container group was presided over by George W. Aljian, past president of the National Association, and Director of Purchases for the California and Hawaiian Sugar Refining Corporation, Ltd., San Francisco. In the course of his opening remarks. Mr. Aljian placed particular emphasis upon the necessity

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Mayor Al Feeney of Indianapolis received ticket No. 1 for the Industrial Show from E. Wayne Allen, Association President. Watching the ceremony are: Don Johnson, Chairman of P. A. Committee; Dan Young, Show Chairman; Oren H. Grant, Conference Chairman; and W. J. Topmiller, Public Relations Chairman.

President M. O. Ross of Butler University reviews the economic situation.

for buyers to give special attention to containers, packaging equipment, and materials handling, all of which offer the purchasing agent a fine opportunity to save a lot of money for his company.

He declared that it is the responsibility of the purchasing agent "to know what his company is getting in the way of shipping cases. In too many instances buyers leave packaging and shipping problems in the laps of their suppliers for solution. It seems to me that you should know more about your company's packaging and shipping problems than do your suppliers."

Mr. Aljian called attention to the deplorable waste and shipping losses incident to the use of poor quality shipping containers, declaring that "the purchasing agent must see to it that the quality of the boxes and other containers he may be buying is such as to afford adequate protection to their contents."

In conclusion he said that the supply situation is easing up and that the time is now right to talk about price and quality.

Glass Containers

"Glass Containers and Closures" was the subject of a paper by J. B. Briggs of the Owens-Illinois Glass Company, at this group meeting. He said that there is every indication that the glass container industry will do more business in 1948 than it did in 1947, when the volume was only 2.7% below the all time peak of 120 million gross in 1946. The raw material supply situation at present, with the exception of fuel, does not look too bad.

"While it is difficult to speak for an entire industry, generally, I believe that operating costs today are at least 50% over the 1941 level," he said. "Still, price levels as of today have increased only in a minor fashion over prices in existence during 1941. This has been brought about by the high percentage of stock mold operation, manufacturing efficiency, and the cooperation of customers in accepting shipments direct from the lehr.

"It is now apparent that a general price increase will be necessary at the end of this quarter. The various factors involved in this increase certainly are not new. Railroad freight increases represent the major item, since freight is paid on three carloads to make one outbound carload shipment (two on raw material coming in and one on the outgoing car). The increases on raw materials, labor, and fuel are other factors.

"During the war the government restricted to a large extent the type of glass containers to be manufactured. With the return of customers' private mold operation, our manufacturing efficiencies are lowered. Actually, if those customers using private molds prior to the war were to all return to the use of such molds, it would decrease our efficiency in the neighborhood of 20 to 25%."

Many new developments are forthcoming in the glass container picture —new designs, new label treatment, better packaging equipment — all adding to the prospects for a better merchandising package in glass in the near future.

Folding Cartons

E. H. Grebe of the Paper Package Co., Indianapolis, expressed the opinion there would be continued growth and demand for paperboard packages . The backlog of the industry as a whole, he said, has dropped from approximately a six months' average down to a five weeks' average . This has been brought about by decreased demands in certain lines of merchandise, liquidation of inventories, and cancelling out of duplicate orders.

"In the last year new equipment has come on the market to help speed up plant output. From the standpoint of equipment the industry is getting in shape to do a better job. The wage scale in the paper box industry has been pushed up fast and it is bound to have a permanent effect on prices for quite some time to come.

"Paperboard in general has become more available. It should be mentioned however, that it is not possible for every carton and paper box manufacturer to turn 'hand springs' to all customer demands. Materials, generally speaking, are still channeled to select customers and not all board mills have become hungry enough to throw open their products and facilities to everyone.

"Summing up," he concluded, "the paper box industry is getting to the place where it is looking for business. It is getting to a point where it is going to be able to do a more constructive job of giving a customer a better break on the price of his cartons. It is also going to be able to create new styles and designs of containers that will fit in with customers' requirements in a competitive market that has arrived for some companies, and is sure to come for all of us."

Fibre Boxes

W. B. Lincoln of the Inland Container Corporation, Indianapolis, talking on "Trends in the Corrugated Fibre Box Industry" said that "Undoubtedly one of the most serious problems which has concerned purchasing agents during the past several years has been that of adequate supply. Estimates indicate that board requirements will reach a total of 11 million tons per year in the very near future, and the best estimate of available capacity ranges between 10.9 and 11.2 million tons. There is promise of balanced supply and demand, but little beyond that. From present indications any new tonnage will be readily absorbed through increased requirements for all grades.

"The demand for paper and board increases with the standard of living. European pulp will be in short supply for ten to fifteen years; the increased production coming into the picture in 1948 and 1949 is almost entirely new pulp production and will for the most part be converted into containers and brown paper. Should the demand for these low priced products fall below the production potential, these new bills would have several places to look for their markets instead of distress selling."

Current industry checks, Mr. Lincoln stated, show that boxes are progressively improving, and as marginal materials disappear and industry problems settled, there will be a steady improvement in quality, attaining and passing pre-war levels.

"For one thing", he continued, "we may anticipate the continued policing of the adequacy of packing by railroad inspectors. It is possible

that certain packs will be embargoed if the railroads find them accounting for an excessive proportion of loss and damage.

"There has finally been a meeting of minds between fibre box technicians and the Railroad Classification Committee. They are now cooperating on a program which it is hoped will produce a practical, workable Rule 41 with separate specific requirements for commodities requiring special provisions.

"Early reports indicate that 1947 loss and damage claims will exceed those for 1946, by one third. They now total over $100,000,000 a year. It is hoped that loss and damage claim reporting procedures can be improved so that shippers will be adequately informed as to what is really happening to their merchandise during transportation. Once the shipper knows he is not doing a proper job of packing he will correct the unsatisfactory situation.

"The packing requirements of any product should be given careful consideration during the early stages of the design of that product. If you do this and insist that your suppliers have an opportunity to pass on their recommendations and suggestions as early as possible in the development of new products, your packing problems will be much simpler and the solution less costly."

Miscellaneous Papers

W. E. Wilson, Sutherland Paper Co., Indianapolis, discussing price and availability for 1948 in the paper, pulp and miscellaneous container industry, said that at this time the matter of price and availability cannot be discussed separately because, outside of material and manufacturing costs, availability has come to have a considerable affect on prices.

"In the past six months," he said, "we have produced our way out of the acute scarcity period and for the most part have reached a position where paper and pulp containers are coming into supply. This does not hold an immediate prospect of reaching a point where there will be a surplus. In fact, there are many items, such as Kraft paper which are still acute, but in the over-all we do not have a trying shortage of paper or paper containers. This being the case, the exaggerated prices as encountered first in the black market and later in the legal gray market cannot remain. But this healthy price adjustment should in no way be construed to precede a general lowering of prices. With cost factors at their present high, and with no prospect of their going down, we do not seem to be in for any real lowering in prices other than removal of the artificial mark-ups which were brought about by scarcity."

Tin and Steel Containers

Ben F. Martin, National Can Corporation, Indianapolis, stated that prices of tin containers have been increased approximately 20% for 1948. Further increases are not expected this year.

He called attention to a conservation program announced by Secretary of Commerce W. Averell Harriman, estimated to save approximately 2,750 tons of tin during 1948, providing Congress passes legislation extending Government control over tin beyond February 29th. The action will be taken through Direction 10 to Conservation Order M-81.

In addition to the overall restrictions on the use of tin by can manufacturers, limits are placed on amounts of tin they can use in making cans for certain specified products. These include cans for beer, animal foods, coffee, motor lubricating oils, and pigment oil paint. Regardless whether government controls are extended, can manufacturers will be limited as to the amount of cans they can manufacture during 1948."

Cotton Bags

Allen C. Greer, Bemis Bros. Bag Co., Indianapolis, discussed the situation and outlook for textile bags. In respect to cotton, the demand is still not filled, judging from the technical strength of the primary market and almost complete absence of mill inventories.

"While the elements of strength in cotton textiles are well known," he said, "we must recognize that supplies in many segments of the market have already come into balance with demand. Price-wise, this can only mean that wherever margins are too wide there will be some readjustments on a selective item-to-item basis. At current high prices for cotton, labor, and supplies, mills are unlikely to produce unsold goods for stock. The elimination of this tendency must be considered a major factor for stability and strength.

"We are witnessing cotton textile production, pricing and merchandising policies on a much sounder basis than ever before. Although buyers' markets in cotton textiles historically have developed following every long sustained upward movement in production, demand, and price, the overall aspects of such markets in the future are likely to be very different from those obtaining in the distressed '30s.

"In the bag industry, cotton goods and burlap are closely related because many times they are inter-

Indianapolis Association President E. Wayne Allen makes ready to welcome conference delegates. At right, President Garnet Dickson of N.A.P.A.; at left, Vice President A. N. Phillips, District No. 4.

National officers at the Industrial Show: A. N. Phillips of Indianapolis, H. W. Macintosh of New York, and C. C. Pingree of Salt Lake City.

Secretary G. A. Renard propounds the $64 question — When?

changeable. During the last year production of jute goods has met world demand and burlap supply has ceased to be a matter of critical importance.

"The current jute crop is the largest for years and production of Indian mills compares favorably with prewar output. Only two Government controls remain: Indian export quotas and the U. S. ban against export of jute cloth and bags. The current Indian quota permits shipments to the U. S. at a rate of about 100 million yards per month, which exceeds both the normal prewar shipment rate as well as the proportion of Indian production taken by the United States.

"Prior to the recent break of one to one and a half cents per yard, burlap prices stood at all-time highs, thereby encouraging use of available substitutes. The anticipated drop of Pound Sterling may or may not affect Indian exchange and cost of burlap.

"Statistically, the U. S. supply position is satisfactory, at least through the first half and probably throughout 1948. It must be remembered, however, that the unsettled Indian political situation might suddenly and seriously affect production of jute goods. Disputes between the two rival dominions, with resulting disorders, are especially important since jute fiber is largely cultivated in Pakistan, while cloth manufacturing is done in India."

Summary by Aljian

Chairman Aljian summarized the discussion at the close of the session. "I think we must all agree that burlap prices are way out of line in their relationship to other products," he said, "but the nature of the article insures a steady demand. We must not forget that this demand is a world demand.

"If you think burlap prices went through the roof during the last six or seven years," he continued, "just take a look at what happened to cotton textiles. In 1941, standard 38½" 64 x 60 5.35 yard print cloth cost 5½¢ per yard; today it is quoted on contracts at 27¢. In 1941, standard bagging, 48" 48 x 44 2.85 yard goods were 8½¢; today they are quoted at 28½¢ for contracts. This means that a 100# white cotton bag such as the sugar industry has used for years, cost a dime or 11¢ in 1941. Now the same article costs 33¢ or thereabouts. The textile industry used to operate on a margin of about 18½¢ on print cloth. It now obtains a margin of about $1.08 a pound.

"There have been numerous reports that spot premium prices have gone into a real softening period, and that print cloth for reasonably quick shipment can now be picked up at the discounted price we would have paid a few weeks ago for today's position. Outside of this, prices at the first-hand level have remained very steady and firm.

"All in all," he said, "it looks as if prices will be more likely to decline than go higher. The supply situation both for now and for the future appears to be easier. It's safe to say that you can go out for almost any construction these days and get what you want, either spot (which may cost you money) or futures. This reflects a number of factors such as better inventory position throughout the country and in the world at large, the possibility of imports of foreign goods to this country, and the probability of lowered exports."

Paper

W. J. Blackley, executive vice president and sales manager of the Beveridge Paper Co., Indianapolis, was the speaker at a special group conference on Paper.

Most shipments of pulp from Northern Sweden have ceased, he said, on account of ice, and will not be resumed until late in May. In addition to this there is a very narrow spread between the prices Scandinavian countries can get for their pulps much closer to home, and the prices we can afford to pay in the United States, which means we are not going to get a great deal of Swedish pulp anyway—only enough so that they can send ships over here to be loaded and return with our merchandise.

Mr. Blackley stated that in Canada experiments on manufacturing wrapping paper made from woodbark have proved quite encouraging, and it is believed the producers will be able to make a heavy wrapping paper in a chocolate brown color from this woodbark.

"In 1948," he said, "we expect to have a 4 to 5% increase in paper and paper board output as new facilities come into production. Some grades are much easier now than they have been, particularly in the high grade paper field. There is a marked shortage in newsprint, most wrapping papers and numerous other printers' papers.

"We feel that there may be a general easing off of the paper situation the latter part of the year, but do not feel it will be very marked unless there is a very decided change in world conditions. If I were a purchasing agent, I would buy what paper I needed about two or three months in advance, and I think that would be playing the game pretty safe."

A general discussion followed Mr. Blackley's talk. So far as the Kraft situation is concerned, it was stated that some prices are too high; that Kraft will be difficult to get for quite a while unless people are willing to pay high prices. "If you want to pay extra black market or gray market prices you can get all you want," it was stated. "The big trouble is that there is always somebody who is 'hungry' and they will pay the prices, raising to a fictitious level. Many things are scarce at their regular price but they are not scarce if buyers will meet certain prices."

Chemicals

Dr. L. S. Roehm of the Sales Department of the Dow Chemical Company, Midland, Mich., in a talk on industrial chemicals said "I think all of the standard basic chemicals such as phenol, caustic soda, the glycols, etc., will remain tight for at least six months. The container situation is a factor. Also, the delays in new plant construction are affecting the supply. Many plants have been started but they are slow in being finished. Some of the chlorinated solvents should ease up in the near future due to the new plants coming in. Pharmaceuticals in general should improve so far as supply is concerned.

"When you stop to figure that

about $500,000,000 are being put into plant construction in the Texas Gulf area alone, the potential supply is certainly bound to improve so far as basic chemicals are concerned, as soon as they are completed. In other words, the industry is facing the future with confidence.

"The outlook for plastics is very good. All the basic materials going into plastics are being increased. The detergent field is growing by leaps and bounds, and requires a prodigious amount of chemicals."

Brass and Copper

Wm. A. Amelung, manager, warehouse division, Chase Brass & Copper Co., opened the Saturday morning session with a talk on "Brass and Copper", from the standpoint of the available supply of copper and zinc, and brass mill capacity to convert this material into the forms in which it is required. He stated that the estimated U. S. copper production for 1948, primary and secondary, will be about the same as for 1947, about 81,000 tons per month. "If we assume the average monthly demand throughout 1948 will be 108,000 tons", he continued, "then the difference between the available domestic supplies and the demand will be 27,000 tons per month, and this will be the tonnage to be secured from foreign sources. These foreign sources in the order of their importance would be Chile, Canada, Mexico and Peru.

"The 4¢ per pound excise tax on copper was suspended in April 1947, and will not be reimposed until April 1, 1949. At that time, because of the reciprocal agreements between the U. S. and foreign countries, the excise tax, when it is again applied, will probably be 2¢ per pound.

"Demand for slab zinc is expected to remain high during the year. Requirements are likely to be considerably in excess of 1947, and it is believed that Government purchases for stock pile purposes during the year may have to be curtailed. If this is done it is hoped that domestic requirements can fairly well be met."

Brass Mill Capacity

On the subject of brass mill capacity, Mr. Amelung stated that he did not want to "be guilty of creating an unduly optimistic picture in your minds which might prompt you to omit taking normal precautions to obtain a satisfactory and uninterrupted supply of these materials. Due to the fact that a combination of circumstances affects various items, I will comment on them separately:

"Sheet: Modernization programs in the brass mills which started prior to the War and which were greatly accelerated by wartime and postwar expansions and improvements, will result, it is believed, in the production not only of more but higher quality metal.

"Rod: The wartime increase in facilities placed particular emphasis on large sizes of rod, and following the end of the war there was considerable tightness in small rod sizes. Rod facilities have been balanced by the addition of equipment at the finishing end and it is believed that rod also will be in sufficient supply during the year.

"Tube: Since the War, there has been no shortage of tube in the larger sizes, but the tremendous increase in the demand for tube under 1" diameter has placed this material in short supply. Various units in the industry have increased their facilities for producing this small size tube. This additional capacity will progressively and increasingly come into production in 1948.

"Wire: Brass mill wire facilities over a period show a peculiar pattern of feast or famine. There is apparently ample wire capacity to take care of normal demand, spread out in an orderly fashion. If orders are entered sufficiently in advance, and if delivery before the material is actually needed is not insisted upon, it is not believed that any wire user need be seriously handicapped during the year."

Concluding his talk with comments on price, he said: "I prefer not to be placed in the position of forecasting, but point out that the market today is firm and the facts indicate that there will be a ready demand at the current price for practically all of the production which will be available."

Transportation

Herschel A. Hollopeter, transportation director, Indiana State Chamber of Commerce, Indianapolis, was the next speaker, his subject being "Transportation and the Purchasing Agent."

"Where generally the purchasing agent may take advantage of the effect of a free flow of competition in securing the most favorable price, the traffic manager may not. He must pay a price that is fixed and published. There is no maneuvering for price position. We must be not only sure we are paying the legal price but also that the quantity of the service we use is not higher than that specified. Severe penalties result from any effort to avoid the exact fulfillment of specified provisions by either party.

"Since July 1946 we have had general increases in this territory that approximate 50%," he said. "We are probably faced with still further

Conference visitors in the Severin lobby just before the cocktail hour.

General Conference Chairman Oren H. Grant makes an announcement.

W. J. Price of Atlas Foundry Company predicts a rise in prices.

freight rate increases in cases already pending before the Interstate Commerce Commission. We will be faced with still further and more drastic rate increases if a new wage increase results from demands now being made and perhaps to follow.

"The trucks now propose extensive revision of their rates to follow the rail changes, and all this is greatly accelerating the purchase and use of private trucks and the transportation by industry of its own products and also inbound raw materials."

Commenting upon the service angle, Mr. Hollopeter said: "It is to be hoped that the assimilation of the increases in rates recently applied and to come will soon enable carrier management to again devote its energies to restoring and progressing efficiencies in operation.

"Government regulations are still felt necessary at least in certain quarters, to secure the most efficient and economical use of cars of all kinds," he said in conclusion. "They are likely to be with us for some time. I particularly have in mind penalty demurrage for delays to cars and requirements for heavy loading."

Management and Purchasing

G. L. Meyer, Vice President, Stewart-Warner Corporation, Chicago, presented an interesting paper on "What Management Expects of Purchasing." His remarks are reported in detail elsewhere in this issue.

From One P.A. to Another

George A. Renard, Executive Secretary-Treasurer of the N. A. P. A., was the next and last speaker on the Conference program. First speaking about the National Association he said that it was in A-1 condition, operating on a budget, within the budget. The association has no bad debts or unpaid bills, and though expenditures have increased, "we have not increased our prices." Association membership has increased 10% every year since 1940.

Mr. Renard said that men in purchasing are judged by the results of their policies and what they do for and in their own organizations, and that the prudent buyer will have his plans open for adjustment every three months—about as far as he can see ahead with reasonable accuracy.

"We are in the process of seeking to find a workable pattern of income and price relationships on a new price level," he continued, "because a large part of the increase in prices since 1940 has become imbedded in the price structure of our economy. The fellow who thinks we are going back to the prices we had 10 or 15 years ago is sadly mistaken. We had better realize that some of our old measurements have become obsolete.

"I cannot offer you any forecast on what will happen nor refer you to any one who can. I think your contacts with your suppliers, and with the salesmen you depend on for information, are probably more reliable than the information you can get from any economist. There is one thing I highly recommend and that is our Business Survey Report. It gives the opinions of able and experienced purchasing men."

Concluding his talk, Mr. Renard said: "And remember this, there is a difference between being a purchasing agent and a good purchasing agent. The difference takes a lot of practice, for it is a difference in knowledge, ability and experience that produces sound judgment on that all important question of *When* to buy. Your job is to buy for today's production and tomorrow's needs, keeping in mind the fact that we are seeking a workable pattern of income and price relationships at a new price level. The best experts don't know yet what that level is to be. Under those conditions it would seem advisable to play it safe by purchasing for today's production and tomorrow's needs, so we can keep production rolling."

The next order of business was the reading of the report of the resolutions committee by Gerald R. Smith, American Rock Wool Corp., following which the conference was adjourned.

Members of the Indianapolis Association are justly proud of the success of the Fourth Industrial Exhibit, held in the Manufacturers Building for four days, concurrently with the District Conference. Admission was by ticket only, and more than 50,000 visitors were registered. For the first two days, the show was restricted to manufacturers and their employees, then opened to the general public. The attendance was notable for the large number of purchasing agents and buyers, plant managers, department heads, and shop men, with a liberal sprinkling of top management officers.

Crowds Throng Exhibit

The acre of floor space was well filled with attractive exhibits of hundreds of different types of tools, equipment and materials displayed by 150 companies, 75% of whom were local suppliers. The monetary value of the exhibits was placed at $500,000.

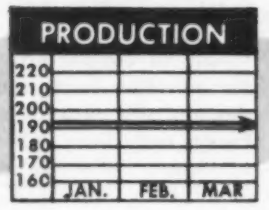
The show was under the immediate supervision of Dan Young, Business Manager and Show Chairman. Don M. Johnson, Purchasing Agent for the American Paper Stock Co., headed the Purchasing Agents' Committee, assisted by George Stalker of W. J. Holliday & Co., Louis Moller of Carter-Lee Lumber Co., John Casebourne of Esterline-Angus Co., Russell Patrick of Edgerton Co., and A. N. Phillips of Stewart-Warner Corp.

"We feel that the show was a real success," said President E. Wayne Allen of the Indianapolis Association. "This is the first show we have held since 1940. It has brought to the fore many improvements in industrial products, and new products, and we are all impressed by the great progress that has been made in the development of new and better methods, tools, and equipment.

"The big thought back of the show is the desire to create and maintain a spirit of good will between buyer and seller. It brings the buyer to the seller under the most favorable conditions. The large attendance and actual business developed at the show have amply substantiated the belief that the time was opportune for an industry-wide exhibit that would make it easy for industrial users of tools and equipment to examine the improved techniques that have been developed to increase production and lower costs."

Exhibitors were practically unanimous in their enthusiastic support of these comments.

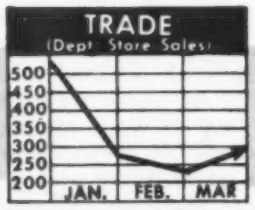
Where We Stand



Today's Business Trends As Reported In Current Statistics

	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index	1935-39=100	192	192	189	—	+ 1.0
Steel Production (Weekly)	000 net tons	1,757	1,671	1,686	+ 5.1	+ 4.8
Electric Power Production	mil KWH	5,293	5,412	4,787	— 2.0	+10.6
Bituminous Coal Production	000 net tons	13,025	11,525	12,807	+13.0	+ 1.7
Auto, Truck & Bus Output	units	103,265	80,384	99,081	+28.4	+ 4.2
Petroleum Output	000 bbls	5,353	5,333	4,824	+ 0.4	+11.0
Engineering Construction	000 $	124,291	118,995	105,343	+ 4.4	+18.0

All Commodities (Bur. Labor Statistics)	1926=100	160.4	159.2	148.7	+ 0.8	+ 7.9
Semi-Manufactured Articles	1926=100	154.1	155.9	144.0	— 1.1	+ 7.0
Raw Materials	1926=100	176.5	173.6	162.5	+ 1.5	+ 8.6
Manufactured Products	1926=100	154.3	153.5	143.7	+ 0.5	+ 7.4
Steel Billets, Pittsburgh	gross ton	$50.00	$50.00	$42.00	—	+19.0
Steel Scrap, hvy, Pitts., del.	ton	44.50	44.50	39.50	—	+12.6
Copper (Electrolytic)	lb.	.21 ½	.21 ½	.21 ½	—	—
Cotton, mid., 15/16"	lb.	.3487	.3330	.3599	+ 4.6	— 3.1
Rubber, (Rib-smoked sheets)	lb.	.20	.20 ½	.25 ¾	— 2.4	—22.3
Wheat (No. 2)	bu.	2.62 ¾	2.64 ¾	3.16 ¼	— 0.8	—16.6



Dept. Store Sales Index (Fed. Res)	1935-39=100	265	238	254	+11.3	+ 4.3
Commercial Failures(Dun & Bradstreet)	no.	113	97	58	+ 6.2	+90.0
Freight Carloadings	cars	792,571	747,394	805,775	+ 6.4	— 1.6

FINANCE

Stock Prices (Standard & Poor's)	1926=100	111.1	110.2	118.2	+ 0.8	— 6.0
Bank Clearings (Dun & Bradstreet)	mil $	11,760	12,455	11,984	— 5.5	— 1.8
Federal Reserve Credit	mil $	21,326	21,732	23,780	— 1.8	—10.3
Currency In Circulation	mil $	28,006	28,189	28,330	— 0.6	— 1.1

Materials & Markets

Materials & Markets

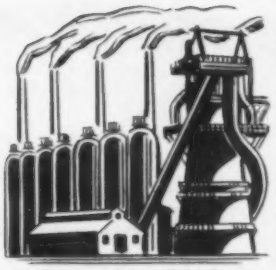
MATERIALS AND MARKETS

The body blow fell earlier than expected but with anticipated force, and at present writing the steel industry once again awaits the decision of John L. Lewis as to whether it will be allowed to produce at the record rate demanded by present conditions. With domestic demand still heavy and the inevitable large commitments involved in the European Recovery Program about to present themselves, the steel industry is faced with rapidly dwindling stocks of the coal it needs to operate with. Following the trail from there to the steel-using industries presents a black picture, if the coal strike lasts much longer. Should the strike end shortly, the cutback in steel production would still have a bad effect in the face of continued high demand.

Gray market prices had begun to drop when the coal strike broke. Any such developments tending to reveal a better supply-demand situation than has existed for the past few years will have to wait on the coal miners. Upon the duration of the strike depends whether or not certain buyers will be willing to go back into the gray and black markets to obtain steel without regard to price.

Warmer weather, and scrap collection drives by industry are being looked to to improve the scrap situation somewhat, but no signs of any appreciable let-up in the famine are evident. An estimated 10,000,000 tons of high quality scrap was found in Germany by the Department of Commerce mission which started an investigation there in December. The practicability of transporting it here has been questioned by some scrap dealers, while other authorities see it as a great find that can be fully utilized by the American steel industry regardless of the difficulties involved in bringing it here. Continued high demand has kept scrap prices firm.

The shadow of the struggle of the nations hangs over all markets, and nowhere more persistently than in non-ferrous metals. Despite high production and the fact that during February there were no transfers to the Government account, an acute shortage in zinc has developed. One explanation is that a large portion of domestic smelter capacity is being used to reduce Government-owned ores and concentrates, most of which were accumulated during the war. Government information on its stockpiling policies or activities grows more difficult to obtain as the headlines grow larger. E.R.P. has yet to make its demands for zinc. No price rises have appeared in recent weeks, but the possibility of a climb is not ruled out because of the tremendous demand . . . Lead, tin, and antimony domestic requirements in 1948 will run far ahead of prospective supplies. Here again, Government stockpiling is expected to be greatly accelerated if the international situation worsens, thereby reducing industry's rations of the metals. World production of the metals is expected to increase, if conditions in foreign countries remain stable — at this point a big "if" . . . Aluminum continues to grow as a "permanent substitute" metal,



and the demand for it shows no slackening. Scarcities in sheets and plates remain . . . An improvement in the world supply of copper has eased the situation here, although demand still exceeds supply. Recent reductions in the price of copper wire are considered to reflect this better condition.

FOREST PRODUCTS

Abnormally high lumber prices still refuse to budge in spite of predictions of the past few months that they could not stay so high for so long. Production in 1947 was 5% over 1946, but 1948 production will not match that according to the Department of Commerce, and the upward pressure on prices will remain. With record construction predicted for the coming year, it appears that as long as the demand lasts, prices will have no trouble in holding their distinction of being "way out of line" with the prices of other commodities. . . . With the extremely bad weather moderating and raw material supplies more easily available, the ratio of United States paper production to mill capacity has begun to climb again. Minor fluctuations are to be expected but the overall rate should stay high. No great decline in demand for paper or paperboard has become evident, but continued industry expansion and modernization will probably equalize supply and demand late this year.

AGRICULTURAL COMMODITIES

Grains continue to be decidedly sensitive to international developments. Wheat led a sharp drop in prices following the President's speech on E.R.P., U.M.T. and the draft, and no let up in the erratic price movements of the past month and a half can be expected as uncertainty as to the future of world peace and stability grows. The Commodity Credit Corporation still has a good deal of buying to do to complete its wheat export program, a factor that will aid in keeping prices up. Good winter wheat crops are predicted here and abroad, however, and a return to the peak prices of earlier in the year is not probable.

CHEMICALS

Basic coal chemical production, recovering from the slowdown due to the cold weather during recent months, was faced with new difficulties as the coal strike began. Benzol, toluol, phenol, naphthalene and other chemicals faced cutbacks, the severity of which depend on the length of time the miners are out, as coking operations are cut to conserve fuel supplies . . . The supply of soda ash should be satisfied "for the most part" by the middle of 1948, according to the Department of Commerce. Liquid caustic soda supplies will also increase in this quarter, it was said, but shortages in containers and evaporating facilities will continue to hold down production of solid forms of caustic soda.

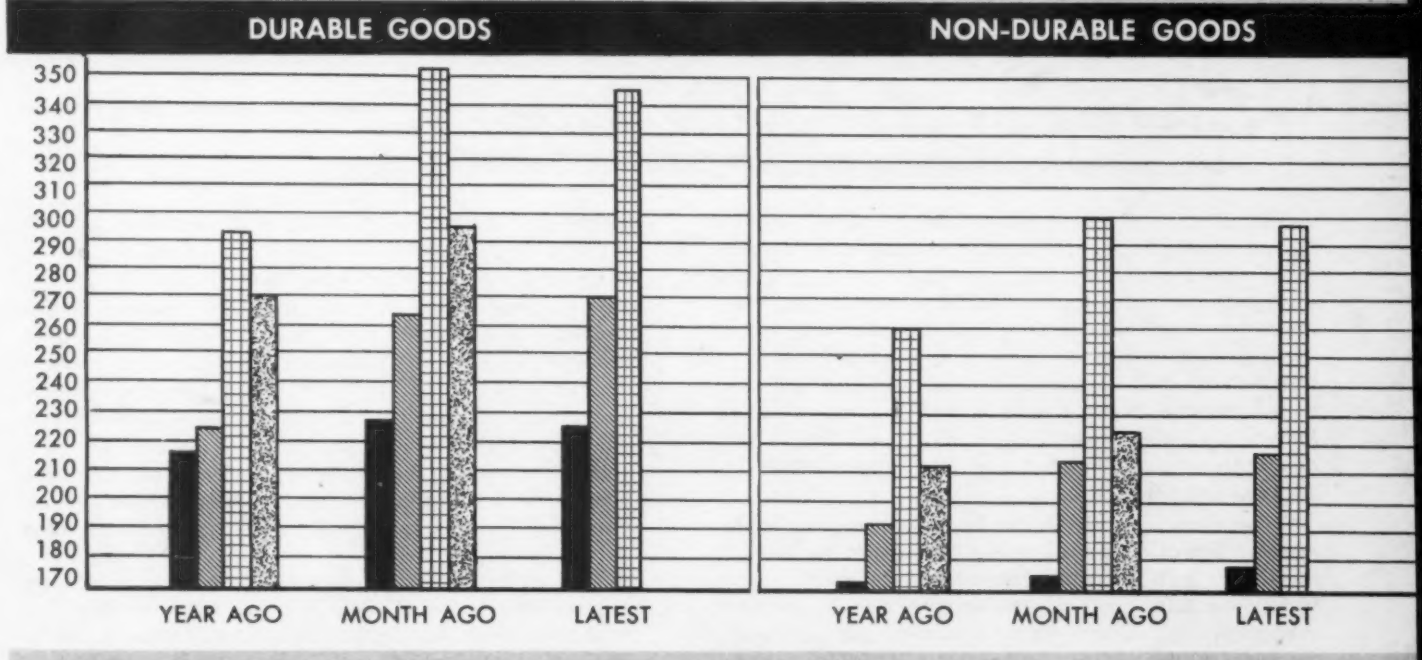
MANUFACTURERS' INVENTORIES, SHIPMENTS AND NEW ORDERS

	1947						1948
	January	August	September	October	November	December	January*
New orders, index, total.....avg. month 1939 100	240	231	257	257	269	252	N.A.
Durable goods industries.....do.....	270	260	287	290	307	291	N.A.
Iron and steel and their products.....do.....	295	285	309	304	347	322	N.A.
Machinery, including electrical.....do.....	308	304		345	349	346	N.A.
Other durable goods.....do.....	215	199	225	232	233	217	N.A.
Nondurable goods industries.....do.....	222	213	238	236	246	228	N.A.
Shipments, index, total.....do.....	274	282	313	318	328	320	316
Durable goods, industries.....do.....	292	301	332	338	351	351	346
Automobiles and equipment.....do.....	246	252	296	301	308	321	317
Iron and steel and their products.....do.....	246	271	294	303	304	295	295
Machinery, including electrical.....do.....	326	351	392	391	412	426	430
Nonferrous metals and products.....do.....	335	311	335	352	396	341	335
Transportation equipment (exc. autos).....do.....	572	497	518	513	568	642	632
Other durable goods industries.....do.....	283	289	316	320	319	323	317
Nondurable goods industries.....do.....	260	269	300	305	312	300	296
Chemicals and allied products.....do.....	264	256	295	296	302	282	281
Food and kindred products.....do.....	291	294	332	338	368	337	333
Paper and allied products.....do.....	255	266	279	287	292	280	278
Products of petroleum and coal.....do.....	224	266	280	280	309	339	340
Rubber products.....do.....	290	300	N.A.	N.A.	N.A.	N.A.	N.A.
Textile-mill products.....do.....	213	205	235	234	231	228	225
Other nondurable goods industries.....do.....	254	271	301	308	286	282	285
Inventories:							
Index, total.....do.....	209	231	234	236	239	238	241
Durable goods industries.....do.....	226	259	263	264	265	267	270
Automobiles and equipment.....do.....	269	327	331	329	322	317	319
Iron and Steel and their products.....do.....	140	160	165	164	165	168	171
Machinery, including electrical.....do.....	299	343	345	350	354	361	364
Nonferrous metals and products.....do.....	179	191	193	190	184	187	189
Transportation equipment (exc. autos).....do.....	816	990	1019	1017	1031	973	983
Other durable goods industries.....do.....	156	171	174	177	177	181	184
Nondurable goods.....do.....	195	207	208	211	215	214	217
Chemicals and allied products.....do.....	199	223	219	217	220	232	230
Food and kindred products.....do.....	206	209	214	219	222	216	214
Paper and allied products..... .....do.....	187	239	245	246	247	251	250
Petroleum refining.....do.....	134	152	157	157	160	156	153
Rubber products.....do.....	238	262	N.A.	N.A.	N.A.	N.A.	N.A.
Textile-mill products.....do.....	177	185	185	185	189	194	189
Other nondurable goods industries.....do.....	217	218	217	226	232	224	220

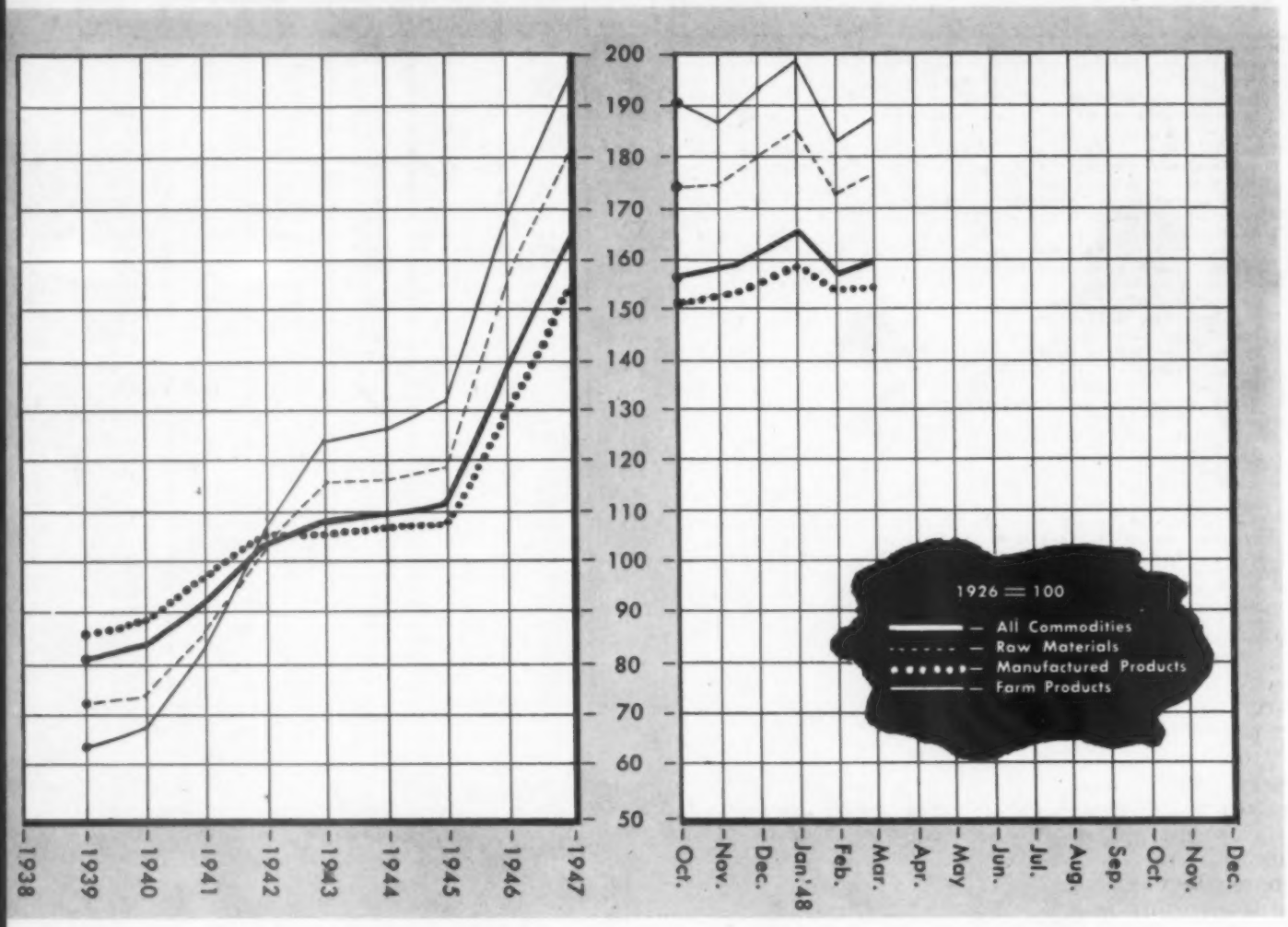
Source - Department of Commerce

N.A. - Not available
*Estimated

Inventories, Shipments and New Orders Compared With Industrial Production



The Price Picture



*ESTIMATED

Straws in the Trade Wind

The Bureau of Mines has produced about 30,000 lbs. of purified commercial titanium tetrachloride, the basic raw material needed for the production of the newly developed metallic ductile titanium. The new metal is a light weight structural material with excellent corrosion resistance, comparable in many instances to stainless steel. Zirconium, another high strength, corrosion resistant metal is also in test production by the Bureau . . . Kennecott Copper Corp. will begin late this year construction of a new electrolytic copper refinery at Garfield, Utah.

Texas Eastern Transmission Corp. has applied to the Federal Power Commission for permission to build a third "Big Inch" pipeline, parallel to its existing two, to bring natural gas from the southwest to the eastern seaboard . . . Crude oil and natural gas "proved" reserves in the United States were boosted to new highs in 1947, despite record high oil production. Crude oil reserves totalled almost 21 ½ billion barrels on Dec. 31, as compared with 15 ½ billion ten years previously . . . Standard Oil Co. of California has begun construction of a $5,000,000 refinery in the outskirts of Salt Lake City. A pipe line is being built through the Rockies from the Rangely field in western Colorado, 182 miles away, to supply the new refinery. The plant is designed to process about 25,000 barrels of crude oil daily .

Middle Atlantic States Motor Carrier Conference has filed a tariff with the Interstate Commerce Commission providing for a 12 ½ % increase on motor carrier rates in that area.

Tax collections have put the government's budget surplus above the $5,000,000,000 mark for the first time in history. Application of current surplus funds to the national debt has brought the debt down to $254,-000,000,000, the lowest point since war time.

First seminar scheduled to be held April 5-10 at Bureau of Federal Supply, Washington. Diversified program gives comprehensive coverage of field of Governmental Purchasing

NATIONAL ACADEMY FOR PUBLIC PURCHASING

THE first seminar of the National Academy for Public Purchasing, open to Federal, State and Municipal purchasing officers, and sponsored by the Bureau of Federal Supply, United States Treasury Department, will be held at the Bureau's offices, 7th & D Streets, S.W., April 5th through April 10th, 1948.

Speakers and discussion leaders have been selected because of their specialized knowledge of their respective subjects, and as will be noted from the following outline of the program, the subject matter is well diversified to give comprehensive coverage of the field of governmental purchasing.

Following registration on Monday Morning April 5th, Clifton E. Mack, Director, Bureau of Federal Supply, and Interim Chairman, will delineate the functions of the National Academy and outline the purposes of the meetings. The rest of the seminar program is scheduled as follows:

Monday afternoon: Address by the Secretary of the Treasury.

Discussion: Organization for Purchase, Stores and Distribution in a Government Establishment, led by Joseph W. Nicholson, Purchasing Agent for the city of Milwaukee.

Tuesday: Discussion: Determination of Requirements, led by Louis J. Cook, Superintendent of School Supplies for the City of New York.

Discussion: Establishing Sources of Supply, led by Rear Admiral M. L. Ring, U. S. Navy.

Wednesday: Discussion: Purchase Methods or Procedures, led by F. Carl Anderson, Director of Purchases, Commonwealth of Pennsylvania.

Discussion: Purchase Contracts, led by Nelson Rosenbaum, Counselor at Law, New York.

Thursday: Discussion: Inspection, led by Captain R. M. Watt, Jr., U. S. Navy.

Discussion: Warehousing, led by Albert Pleydell, General Manager, Health Insurance Plan of Greater New York.

Friday: Discussion: Accounting and Paying, led by Miner B. Phillipps, Executive Director, Municipal Finance Officers Association of the United States and Canada.

Visit to the National Bureau of Standards.

Saturday: Discussion: Standards, led by Colonel B. L. Neis, U. S. Army, and Willis S. MacLeod, Deputy Director, Standard Branch, Bureau of Federal Supply.

Discussion: General Purchasing, led by W. Z. Betts, Director, Division of Purchase and Contract, State of North Carolina, Raleigh, N. C.

The purpose of the Academy, according to the Treasury Department, is to exchange knowledge of buying practices and techniques among Federal, State and Municipal purchasing officers, with a view to raising the standards of efficiency in governmental purchasing. In other words, the Academy is a governmental procurement experience exchange established on a nationwide basis. Interim Chairman Mack states that the program is on a voluntary basis, and in carrying it out, only the existing facilities of the Bureau of Federal Supply will be used.

Advisory Committee

The Academy advisory committee is made up of representatives of educational institutions, state government, federal government, and industry, with the following members:

Educational Institutions: Emery E. Olson, Dean, School of Public Administration, School of Government, The University of Southern California, Los Angeles; Philip Young, Dean, School of Business, Columbia University, New York.

State Government: Wilmer Z. Betts, Director, Division of Purchase and Contract, State of North Carolina, Raleigh, N. C.; Walter N. Kirkman, director, Department of Budget and Procurement, State of Maryland, Baltimore, Md.

Federal Government: William C. Foster, The Under Secretary of Commerce, Washington, D. C.; John R. Steelman, Assistant to the President of the United States, Washington, D. C.

Industry: Albert J. Browning, Vice President, Director of Purchases, Ford Motor Company, Dearborn, Mich.; Harry L. Erlicher, Vice President in Charge of Purchasing, General Electric Company, Schenectady, New York.

Mr. Mack said the appointees, who will serve without pay, bring a "needed wealth of experience to one of the largest problems in the realm of government.

"It is estimated that the Federal Government alone spends over one billion dollars a year in the supply operation," he said. "Certainly its efficient conduct is therefore a matter of critical importance and any

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EXPORT CONTROLS EXTENDED IN 1948

● **By Francis E. McIntyre,** Assistant Director
Office of International Trade, U. S. Department of Commerce

New policies are designed to assist our foreign policy and to combat inflation

THE EXPORT control policy of the government is necessarily two-sided. On the one hand it restricts the movement of goods in order to protect the domestic economy from an excessive export drain. On the other hand, it directs goods to certain destinations in conformity with the needs of our foreign policy. This nation has obligations which stem from humanitarian motives as well as from national self-interest to make a substantial contribution to world recovery.

Current export control policy has been reoriented to these objectives and, further, to conserve limited dollar exchange available to foreign nations and to combat inflation both here and abroad by favoring exports made at the lowest prices, and to restore a greater degree of competition in foreign trade.

The mechanics of export control are being adapted to meet these objectives, as is evidenced by the establishment of quotas on a country basis wherever feasible; by the wider use of the individual license to achieve more specific control; by the Country Group R procedure, permitting scrutiny of all exports to Europe beginning March 1, 1948; and by the new licensing policy in which price is an important consideration.

Quantitative ceilings on exports of controlled commodities are determined by the Secretary of Commerce on the recommendation of an interdepartmental group known as the Review Committee. For most controlled commodities, specific quantitative quotas are established on the basis of an appraisal of minimum essential foreign requirements in terms of the impact on the domestic economy. For a number of especially critical commodities such as pig iron and jute, closed quotas are established under which exports are permitted only in exceptional circumstances. All quantitative export quotas are published by the Department of Commerce in its Current Export Bulletins.

During 1947, exports of most controlled commodities have been subject to either the consolidated or individual license procedures. The consolidated license, which permits control of the shipment of one or more commodities to one or more destinations, has been used most effectively where the principal control objective has been to limit the volume of exports rather than to control the geographic distribution of shipments. The individual license procedure permits closer direction of exports; a separate license is required for each commodity and consignee, and end-use must be specified. Because of the greater need for direct control of the destination and end-use of important commodities, in furtherance of our foreign policy, many commodities which were exported under consolidated license during most of 1947, such as steel, food, and chemicals, are now subject to the individual license procedure.

The blanket license, under which a single approved application may authorize shipment to a number of different consignees within a designated country, has been used for very few Positive List commodities in recent months. A modification of it, to be called the Multiple Consignee License, will, however, be applied extensively under the Country Group R plan for the export to Europe of commodities not appearing on the Positive List. Further simplifications are being developed and will be announced as rapidly as possible.

The Positive List, which was established in September, 1945, is the basic list of commodities, the export of which to any destination (except Canada) requires a validated license. During 1947, the number of export classifications on this list declined sharply, as shown in Table I, but at the beginning of 1948 the trend was reversed with the addition of 36 steel items to the list.

TABLE I

Number of Schedule B Classifications on the Positive List

January 1, 1947	635
April 1, 1947	515
July 1, 1947	375
October 1, 1947	352
January 1, 1948	386

TABLE II

Percentage Distribution of U. S. Exports (excluding Canada) Third Quarter, 1947

Kind	Total Exports	Controlled Exports	Uncontrolled Exports
Foodstuffs	17.4	43.2	9.2
Textile fibers and manufactures	11.5	0.4	15.2
Coal and petroleum	8.9	26.3	3.3
Metals and manufactures	10.1	19.0	7.2
Machinery and vehicles	30.5	1.0	39.9
All other	21.6	10.2	25.2
	100.0	100.0	100.0

Since export controls during the latter half of 1947 were limited to items in short supply in the United States and the world, less than one-fourth of the total value of our export trade (excluding Canada) was subject to license control. Exports to Canada are not subject to control at present, in accordance with the Hyde Park Agreement. A detailed study of third quarter 1947 exports reveals that controlled trade, which amounted to $706 million in that quarter, was heavily weighted by foodstuffs and fuels, which together account for 70% of the total. As shown in Table II, the machinery and vehicles group accounted for over 30% of our total exports, but represented only a minute fraction of the controlled trade.

The distribution of controlled exports indicated in this tabulation is, of course, greatly affected by the degree of controls exercised within the group. More than 60% of all exports of foodstuffs in the third quarter were shipped under validated licenses. A slightly higher percentage of the nonmetallic minerals group, which includes principally coal and petroleum, were under control. At the other extreme, in the textile and the machinery and vehicle groups, less than 1% of the shipments were controlled. Table III shows the degree of control in the third quarter for some important commodities.

Export licensing controls exert an important influence over the geographic distribution of exports. As a result of the direction of shipments of food and coal to Western Europe, more than three-fifths of the exports of all controlled commodities moved to that area, compared with less than one-third of the value of uncontrolled shipments. (See Table IV). In terms of specific commodities, Western Europe received during the third quarter 63%, by value, of our controlled exports of food. 85% of coal, 65% of lumber, and 30% of steel. Latin America received almost half of our controlled steel exports during that period. European requirements for steel have been heaviest for crude and unfinished steel products, which are in extremely short supply in the United States. Requirements of Latin American countries are more diverse, and have been increased by the fact that their former sources of supply in Europe are not presently able to ship to them.

The degree of control over export trade exercised by the government during 1948 will undoubtedly be greater than in 1947. If some of our current shortages persist, additional commodities may have to be added to the Positive List. The Country Group R procedure, effective March 1, 1948, brings another 25% of our exports under some measure of control in addition to the 25% which were under control at the end of the past year.

Under the Country R plan, validated licenses will be required for exports to European destinations of all commodities, whether or not they appear on the Positive List. The complete list of destinations coming under the R Group, as set forth in Current Export Bulletin 434, January, 1948, included all of the countries of continental Europe, the British Isles, Iceland, Turkey, the U.S.S.R., all Asiatic possessions of the U.S.S.R., Turkey, Portugal (including the Azores and Madeira), Spain and all Spain's colonial possessions, and the Mediterranean islands. For all other destinations, constituting Country Group O, export licenses will be required, as at present, only for the commodities on the Positive List.

The decision to adopt this plan was made in order to further the foreign policy of the United States in three important respects:

(1) Essential materials should be channeled to those countries and end-uses which will assure the greatest contribution to the recovery of Europe.

(2) Shipments should not go forward for purposes inimical to the welfare of the United States or to world recovery.

(3) The people of the United States should have assurance that this government is cooperating with those actively promoting European recovery so that limited dollar resources will be husbanded for the most essential purposes and so that the burden of aid to Europe will not be increased by uneconomical employment of this limited purchasing power.

The other major change in export control policy for 1948 is the new license distribution policy under which competitive price will be an important criterion. This policy was announced in Current Export Bulletin 431, and is designed to achieve three purposes:

(1) To restore a greater degree of competition in the export trade.

(2) To conserve scarce dollar exchange abroad.

(3) To reduce the inflationary impact of export demand in United States markets.

The use of price criteria was specifically authorized by Congress in Public Law 395, approved on December 30, 1947. Section 3 (b) of the statute states that the President "is authorized to use price criteria in the licensing of exports, either by giving preference among otherwise

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TABLE III

Percent of Total Exports of Selected Commodities under Control, Third Quarter 1947

Coal	100.0
Fats and oils	100.0
Grains	94.4
Meats	81.1
Lumber	75.2
Fertilizers	68.5
Steel	55.5
Fodders and feeds	48.7
Petroleum	43.1
Industrial chemicals	35.9
Coal tar products	30.4

TABLE IV

Distribution of Controlled and Uncontrolled U. S. Exports by Area of Destination

Area	Total (percent)	Percent of Total	
		Controlled	Uncontrolled
Western Europe	39.5	61.1	32.5
Latin America	33.0	20.6	37.0
Asia	14.1	9.0	15.8
Other	13.4	9.3	14.7

THE PURCHASE ORDER

● *By Frank J. Schweiss*

A simple form, with complete statement of all essential data pertaining to the transaction, makes for efficient and orderly conduct of the buying function

THE purchase order is only the document showing in writing, a procurement. It is the culmination of work done over the telephone, in the personal interview, and through letters. It is the last word on what is desired, and the premise on which the supplier furnishes the goods. It must therefore be complete and accurate.

The purchase order has its origin in one of two ways—in the purchasing agent's office, or in some other department of the firm. In purchasing ahead of requirements, it would be the purchasing agent's prerogative to initiate the order, since it is his foresight that does necessary dealing in futures. On all other occasions, when business is definitely assured and material needs arise, the other departments will let the purchasing agent know what is needed for their department to fill the sales orders and manufacturing schedules.

The planning department will specify raw material, since they receive the order from customers through the sales department, who turn it over to planning for working. These requisitions should receive immediate attention, because they are for production material without which the mill cannot operate. The stores department will request periodically those stock, materials which are used always in operation. The nature of the business will determine what should be ordered by planning, and what should be ordered by stores. In some cases it might be better to carry a quantity of raw materials in stock rather than to purchase them for each order, but in any event, definitions should be set up between the two which will best suit efficient ordering to keep production running smoothly.

Of course, the purchasing agent will have a copy of all sales orders and know in general what is required, but he should let the planning and stores department tell him first specific quantities are needed. If any other judgments or opinions are to be made regarding quantities to be ordered, the two can get together and talk it over.

Requisitions for maintenance material, tools, die equipment, motors, steel and machinery, or whatever else is found necessary to operate the mill to fill the orders, will come from the production engineering department, through the superintendent or other engineers and foremen. In some large plants, where many departments are necessary to do various operations on a given part for sale, the requests for material may come from the superintendents of each of those departments.

In the large business, purchasing is so divided that one man handles only a certain portion of purchases, either the machinery, raw materials, chemicals, fuel, or whatever it may be, so that the time element is taken care of, and all necessary materials purchased in time to meet production of the sold article. If the business is contained all on one floor or on a couple floors of a building, a purchaser is in a position to see the whole setup quickly, and one or two men can give him the necessary requests for material.

All requests or desires of various departments for needed material should be given to the purchasing agent in writing. It may be called by sundry names, but in the end it is a requisition, and it corresponds to the purchase order except that the requisition goes to the purchasing agent for procurement, and the order goes to the supplier. Two copies of a requisition should be sufficient. One sent to the purchasing agent, and the other kept by the department requesting the material. Requisitions should not be indiscriminately thrown about, for they are a very important bit of paper, and constitute a calculation for needed material which are accepted by the purchasing agent as a valid basis on which quantities of materials are ordered. These requisitions for materials should be given to the purchasing agent immediately when the need is known so that as much time as possible can be given the suppliers.

The purchase order should be very simple. It should be of letter size paper, which makes it easy to file and also easy to handle in relation to other papers which are usually of the same shape. In actual practice, we find that purchase orders are of all sizes, contain many legal admonishments, various ruled and printed portions, printed numbers, perforated edges, in various sizes, shapes, and attached copies. All this rigmarole is cumbersome, confusing, and time wasting for the supplier to make sure he has all the required information. It only makes things more difficult and allows a greater chance for error when the order is not simple.

The purchase order should be on plain white bond paper. At the top should be the purchase order number, the requisition number, the date of issue, and the buyer's firm name and address. The name of the company from whom the material is being purchased, specified method of shipment, and where it is to be delivered, should come next. A description of the material to be bought should then be given, complete and concise as to what is wanted, and any other pertinent information or data that will aid in filling the order. The quantity, price, terms, and point of shipment should also be clearly shown. The signature of the purchasing agent completes the order.

The only printed condition that should be shown on the face of the order is perhaps a line or two, couched in proper legal phraseology above the company signature, stating that the order is entered under terms and conditions shown on reverse side of order. On the reverse side may be shown in printed form the details of all terms, conditions, and legalities necessary. In other words, the completed purchase order looks like any ordinary letter in form and aspect, is free from excess verbiage, easy to read, easy to handle, file, and interpret, contains every essential, and leaves nothing to conjecture.

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A-C WELDING PROMISES SPEED AND ECONOMY

Eighty percent of today's welding is done with direct current, but technicians predict that this ratio will be reversed as the new alternating current methods are better known

TWENTY-ONE million, six-hundred thousand dollars ($21,600,000) is a lot of money even in these days of governmental budgets, gifts, subsidies and so on whose volume and roundness of figure simulate those of astronomical light years.

Yet, that tidy sum of $21,600,000 is the potential saving that Westinghouse technical engineers claim could accrue to industry through the universal adoption of welding with alternating current, made possible by modern a-c welding. A-c welding, they claim, not only does a welding job faster, but faster and better—four times out of five.

On a monthly basis, the saving is $1,800,000 per month, which is well termed a startling saving when it is associated with but one of the thousands of operations, methods and processes that mark the activities of American industry day in and day out.

Broken down into the four common factors of production costs, this $1,800,000 monthly saving is made up of a saving of $1,245,000 in wages, $503,900 in power, $18,800 in depreciation, and maintenance savings of $62,500.

Though these figures are frankly characterized as "boxcar figures", industrial welding statistics are set forth to establish that they are factual—and corroborated by actual operating figures that prove that a-c welding is faster, cheaper.

Today, the ratio of arc welding equipment in use in American Industry is estimated to be 80% d-c to 20% a-c. It is the sense that when industry is cognizant of the tremendous money savings and the faster, better work claimed for a-c welding, this ratio will in due course be completely reversed, and that the preponderance of welding equipment in use will be a-c.

These are savings in dollars and claims for better and faster work that are well worthy of the attention of the industrial purchasing agent, for obviously men in purchasing are much concerned about equipment and processes that make for substantial savings.

Money savings made possible by new methods and modern equipment are of concern to the industrial purchasing agent from two angles—one, from the standpoint of cutting costs and improving on the quality of work in his own plant, and two, from the standpoint of the purchase orders and contracts issued over his name to suppliers and subcontractors.

To the purchasing agent, faster and better work means better quality, better delivery, and better price. He knows that the cost of a three-cent stamp that he may save on a dollar purchase earns as much profit for his company as 3% profit that may accrue from a dollar sale. Put this small purchase saving on a volume basis, and you will find that it would take a healthy increase in sales to equal the buying-profit earned by intelligently directed purchasing.

Accordingly, the asserted definite savings made possible by a-c welding will intrigue the industrial purchasing agent, and without question it will be his responsibility and delight to select those suppliers and subcontractors who will be able to pass on to him the savings thus developed and yet retain a fair margin of profit for themselves.

The largest savings, as indicated, are savings in wages, and the stated savings of almost one and a half million dollars a month are based on the assumption that the welder is being paid $1.50 per hour. They do not include savings in overhead which ordinarily are charged to an operation.

This labor saving is based on the proven records that a welder using d-c equipment will weld an average of 3 pounds of electrode per hour, and the claim that the same welder using an a-c welder will deposit not less than 3.6 lbs. of metal in the same

Appropriately, the frames and cases of the new a-c welders are fabricated by welding.

Transformer cores are made of Hipersil, a high-permeability silicon with superior magnetic qualities and high space factor, making it possible to pack maximum welding capacity into a compact, light-weight unit.

Welding current output is read directly from the dial, shown here being connected to the core of the adjustable reactor.

Photographs by courtesy of Westinghouse Electric Corporation.

●

Finished welders are tested for: no-load exciting current, no-load watt loss, and standard AIEE insulation tests. Indicator dial is adjusted under varying load conditions.

time. This is made possible because a-c welding is done with higher currents, less spatter loss, and freedom from arc blow. This represents an increased deposit by a-c welding of 20%—a saving not to be snickered at. On a national basis, with 80% of welding being a-c welding, the man-hour saving is placed at 830,000 hours, at $1.50 per hour, or $1,245,000.

The power saving of $503,900 is comparatively not so impressive. It does run into a substantial figure, however. In general, the cost of power used in welding has been disregarded because it has been felt that the power was low in cost compared with the other operations. However, the economics of welding indicate that a-c welding equipment operates near 90% efficiency (85% to 95%) while d-c welders operate near 60% (55 to 65%). No-load losses of a-c welders run about 170 watts, while these are nearer 2600 watts for the d-c welder. If, then, a welding load of 300 amperes at 40 volts and a cost of power at 2¢ per kwh is assumed, the potential nationwide saving in energy cost alone is as indicated.

Depreciation savings are placed at $18,800. It is stated that assuming a capital charge of 1% per month, this amount would be saved by reversing the ratio of a-c to d-c welders, inasmuch as fewer machines would be required. This is said to be a conservative estimate, as experience indicates that 1% is low for the d-c machines and high for the a-c machines.

And, of course, maintenance cost is of interest because it means money outgo. It is stated that the maintenance required for a-c welders is ordinarily less than one-third of that required for d-c sets. Based on the number of sets in operation, were the ratio of d-c and a-c sets reversed, the previously mentioned saving of $62,500 is set forth as a possibility in this single item.

Reviewing the history of a-c welding, the technicians state that the desirable characteristics of a-c arc welding were appreciated years ago, but early attempts to introduce it failed primarily because of the lack of suitable electrodes.

Bare type electrodes, commonly used twenty or more years ago, require a high open circuit voltage to aid in striking the arc and to prevent the arc from being extinguished during current reversals. With voltages below 150 volts, except on large electrodes or very high current densities, arc stability was very poor. Furthermore, the possible hazard of such a high open circuit voltage caused most manufacturers to decide not to put such a welder on the market.

Research, development and experience have overcome the original limitations of a-c welding. As a result it is now possible for the user of welding to take full advantage of this method of metal joining, with virtual absence of arc blow, faster welding, lower power consumption and lower maintenance cost.

Previously lack of suitable electrodes placed definite limitations on a-c welding. Suitable electrodes are now available, and one of the important developments in the a-c electrode field was the all-position type electrode. This class of electrode produced welds of high strength and moderate ductility and also operated on low open circuit voltages; considerably lower than 80 volts. This was followed by alloy-steel electrodes, stainless steel electrodes, hard-surfacing electrodes, cast iron type electrodes, and bronze electrodes. All of these operate satisfactorily at open circuit voltages of 75 volts and many will operate on open circuit voltages as low as 50 volts. And in 1943, the all-position high ductility a-c electrode was developed to complete the line. This is the A.W.S. Class E-6011 electrode.

Concurrent with these developments in electrodes, Westinghouse developed a new series of a-c welders for 75 and 80 volts open circuit voltage.

Low open circuit voltage makes possible reduced machine size, increased efficiency, better power factor and increased safety, and effort was directed toward designs with low open circuit voltages. Although certain electrodes are available that will operate on open circuits as low as 50 volts, most commercial electrodes of the E-6011, E-6012 and E-6020 types will develop occasional arc extinctions on open circuit voltages lower than 65 volts. To insure satisfactory welding operations, even in cases where the primary line voltage is low, it has been the practice in the past to design a-c transformer welders with an open circuit voltage of 75 volts.

One of the important developments is a Westinghouse transformer welder design with 65 volts open circuit, that makes possible improved arc striking characteristics and arc stability with any type of a-c electrode at open circuit voltages as low as 55 volts. These machines are designed with open circuit voltages of 65 volts in order to allow ample margin in cases of low primary line voltages. The electrical efficiency of these machines is approximately 92.5% at rated load, and because of primary power factor correction they have a power factor of 80% at rated load.

The a-c equipment produces better welding, faster welding and cheaper welding, along with higher efficiencies and lower costs, because the a-c arc blow is virtually eliminated and higher welding currents are possible.

Arc blow is one of the greatest obstacles to high speed welding and high quality welding, especially when welding in corners and angles and when using high currents. It causes unsound and rough unsightly welds, the welding operator loses time striking and maintaining the arc, and metal is not deposited where desired. With a-c welding, the almost complete absence of arc blow eliminates these difficulties with the result that welding speeds are increased, the weld quality is improved and repair work is reduced to a minimum.

A-c metallic arc welding is applicable to most types of metals, excepting some of the non-ferrous ones such as aluminum, magnesium, nickel, monel metal and copper alloys.

THE POWER BEHIND FLUCTUATIONS IN BUSINESS

As our knowledge of solar influence emerges from the realm of the occult into a scientific pattern capable of measurement and interpretation, the business cycle may be better forecast

●

By Julian G. Davies

THE recent review of the book "Cycles—the Science of Prediction," by Grey Leslie in his customary lucid manner serves to emphasize the need for Purchasing men to give serious thought to the manner in which cycles in business, as well as in nature, tend to repeat themselves. His statement that "knowing where we have been may be the best clue to where we are going, and knowing the size and force of the wave about to hit us, may give us a better chance to breast or ride it," gives plenty of food for thought. What purchasing agent wouldn't like to know what size of wave will hit us next, in what direction will it be headed, and above all, *when* will it hit us?

Major fluctuations in business are usually the result of confidence, or the lack of it, in the thinking of the business community. Confidence is a product of the mentality, and conditions which affect the minds of men and women in the mass will therefore have an important bearing on such manifestations of mental instability as business booms and depressions, with their accompanying purchasing and inventory problems.

Albert Edward Wiggam in his book "The Marks of an Educated Man," points out that "the past 150 years have been an era of mechanical invention, but the next century will be an age of social and educational invention. These will meet with far more laughter than did mechanical inventions, because they touch people's prejudices, and puncture their egotism." To suggest that there may be a definite connection between cycles of mass human emotions on the one hand, and sunspot activity on the other, opens the flood-gates to a wave of pooh-poohing, viewing with disdain, and sarcastic comments by present-day prototypes of those hosts of reactionary critics who derided the idea of the telephone, the automobile, airplane, radio, and most other innovations of bygone days which are now integral parts of our daily lives.

The idea of sunspots, too, was treated with levity until it was found that our radio reception was interfered with, or prevented entirely, during periods of intense sunspot activity. So, too, was the operation of telegraph and cable facilities. At such times, the Northern Lights are displayed in all their maximum splendor. Violent thunderstorms and other phenomena of the weather also accompany excessive sunspot activity. It has been ascertained that these phenomena are caused by tremendous bombardments of our earth by electrically charged particles emanating from sunspots.

Human Dynamos

If these electrical bombardments wield such a profound influence on the magnetic field surrounding our earth, it seems reasonable to suppose they also exert a tremendous impact on the infinitely more delicate electrical mechanism of the human body. Regardless of any notions to the contrary the boss may hold, we are all human dynamos. We all generate electricity in the cells of the body, and use it in much the same manner as an automobile. This electricity is of four types.

First is a direct current, in which the cells act as a B-battery.

Second, all muscles give off an alternating current when contracting. Each wink of an eyelid discharges electricity. The electric potential of the human stomach, when empty, is fairly constant, but if milk, for instance, enters the stomach, the voltage rises perceptibly.

Third, and most pronounced, is the electricity generated by heart action. This is the type of electrical discharge which the electrocardiograph is designed to measure.

Fourth, are the "brain-waves" which we are sometimes accused of having, and to which we must always plead guilty. We have them constantly during every waking hour. These electric waves originate in the brain, and are projected along the central nervous system in the same manner as electric currents along a telegraph wire.

We have known for many years

that the lower animals have a similar electric generating plant to that of the human animal, but more recently it has been proven conclusively that all seeds of plants also generate electricity. The voltage begins to manifest itself when the seed is soaked in water for several hours to start the germination process. It is invariably found that seeds with a high prime potential germinate earlier, grow into more sturdy plants, better able to resist diseases, than those with a medium or low potential. We know that in man, too, there is a wide variation in the amount of electricity generated by individuals. Some cannot wear wrist watches successfully because of the effect of their personal magnetism on the watch mechanism.

What We Know

Let us put together and consider some of the known facts regarding sunspots and human behavior:

(a) We know these spots are the sources of tremendous discharges of electrical energy to the earth's surface.

(b) We know the intensity of sunspots follows a definitely recurring cyclical pattern.

(c) We know this solar electricity profoundly affects the field of electricity surrounding our earth.

(d) We know that the human animal is itself an electrical generator, and that the brain is the source of the energy which provides the motivation of all human endeavor.

(e) We know that the human animal is subject, in regularly recurring cycles, to mass hysteria, or mental aberration, in such diverse forms as labor unrest, wars, revolutions, marathon dancing, flagpole sitting, pogroms, waves of racial intolerance, and, more commonly still, indulgence in orgies of speculation, cash spending, installment buying, and unrestrained optimism which pushes business to fantastically high levels, followed by periods of black pessimism in which business and human welfare are plunged to levels which produce untold misery throughout the world.

Where It Leads Us

Placing these facts together where they may be viewed through the glass of cold logic, does it not seem possible that the cyclical manifestations of mental instability which have been so clearly apparent at regular intervals during the past several hundred years are the results very largely of the blending of solar and human electricity, and the effects of that fusion on the human mental processes? No one can state positively, at this stage, that such is the case, nor do we know exactly what influences the other celestial rays—cosmic, gamma, and other emanations—exert on our intellects.

It need occasion no great surprise, however, if eventually business forecasting ceases to be an art, and becomes largely an exact science, based on scientific formulae, readily available to all. When that time comes, business management will budget with greater precision, forecasting will cease to be a responsibility of Purchasing, and inventory management will conform to availability of materials, with much less regard for the uncertainties of future commodity prices.

Our individual financial affairs will be conducted much more efficiently and economically. We will realize more clearly that periods of expanded production and higher prices are not the proper times to purchase a home, an auto, or a major item of household equipment. Such transactions will be made when production drops below the median line, and prices are low. The pronounced peaks and valleys in the production line will be rounded off, eliminating much of the dislocation in business and prices which have plagued us in the past.

The rapid and continuous unfolding of the mysteries of the universe now taking place can provide a never-ending study of absorbing interest, even though many of the disclosures are so stupendous in their implications as to be beyond our limited powers of comprehension. They constitute a complete antidote for any inclination on our part to become unduly impressed with our own importance in the scheme of things. Man, any man, cuts a woefully insignificant figure when fitted into his own little niche. There can be no opportunity for boredom where there is a growing realization and understanding of the truly marvellous operation of that finely balanced mechanism, the human body, and the manner in which it is influenced by natural phenomenon.

Certainly, there is plenty of food for thought in the mechanics of applying our knowledge of these matters toward a continuous improvement in our own individual welfare, and in our manner of performing our function of purchasing.

"You're right — He is out."

PRODUCT DELIVERY INFORMATION

NO major changes appear in this month's report but slightly better delivery times are given for a number of items, particularly in the transmission and materials handling sections. As reported last month, it is becoming increasingly evident that pipe-lines are filling.

As products are reported "stock" or "immediate delivery" they are dropped from the listings. Attention is drawn to the fact that the delivery time shown represents in many instances the range of delivery reported by several manufacturers.

DELIVERY TIME	
Standard Products	**Special Order**
ABRASIVES, COATED	
Immediate to 3 weeks	3 to 4 weeks
ADHESIVES	
Industrial Adhesive Tape	
2 to 6 weeks	6 to 8 weeks
Elec. Cloth Adhesive Tape	
2 to 6 weeks	6 to 8 weeks
AIR EQUIPMENT	
Compressors	
1 month	2 months
Pumps, Vacuum	
2 weeks	2 months
ALUMINUM	
Sheet & Coil Products	
12 weeks	12 weeks
Extrusions	
4 to 5 weeks	6 weeks
Rod and Bar	
2 to 4 weeks	3 to 5 weeks
BEARINGS	
Babbitt Metals, All Grades	
1 to 7 days	3 to 10 days
Steel Balls	
1 to 3 months	3 to 6 months
Retainers	
2 to 4 months	indefinite
Bearings	
10 days to 4 months	3 to 5 months
Balls, Non-Ferrous	
1 to 3 months	3 to 6 months
Bearings, Roller	
2 to 4 months	3 to 5 months
BELTING	
White Solid Woven Cotton	
Stock — 2 weeks	1 to 3 months
Canvas Stitched	
Stock — 4 weeks	1 to 2 months
Balata	
Stock — 2 weeks	4 to 6 weeks
BRASS & COPPER MILL PRODUCTS	
Brass Strip (Gauges over .016)	
3 weeks	— —
Brass Sheet, under 12"	
3 weeks	— —
Brass Sheet, over 12"	
5 to 7 weeks	— —
Brass Rod Special	
— —	3 weeks
Brass Wire	
3 weeks	— —
Seamless Copper Tube	
3 to 5 weeks	— —
Soft Copper Tube, Coils, under 1"	
8 weeks	— —
Soft Copper Tube, Larger Diameter	
4 weeks	
BRONZE PARTS	
Extruded Bronzes	
2 to 3 weeks	3 to 4 weeks
Light and Heavy Bronze Castings	
2 to 3 weeks	3 to 5 weeks
BRUSHES	
Power Driven	
1 to 3 weeks	3 to 4 weeks
Paint & Varnish Brushes	
1 to 3 weeks	3 to 4 weeks
Wood Handle Wire Scratch, Wire Wheel and Wire Flue and Tube	
1 to 4 weeks	2 to 4 weeks

DELIVERY TIME	
Standard Products	**Special Order**
CASTINGS	
Gray Iron	
60 days	— —
Steel	
4 to 6 weeks	4 to 6 weeks
CHAIN	
Steel	
1 to 12 months	1 to 6 months
Malleable Iron Chain, Light	
30 months	30 months
Malleable Iron Chain, Heavy	
8 months	10 months
Machine Finished Roller	
12 months	— —
Steel Chain	
6 to 8 months	8 to 9 months
Welded	
1 to 12 months	— —
Weldless	
1 to 12 months	— —
CHEMICALS	
"General shortage of rubber drums, steel drums, and carboys.	
Carbolic Acid	
Tight: Annual production committed under contract.	
Formaldehyde	
Very short supply.	
Chemical Process Equipment	
12 months	16 months
CLEANERS	
Parts Cleaners	
10 to 15 days	20 days
Solvents	
1 week	— —
COATINGS, PROTECTIVE	
3 weeks	5 weeks
COATING EQUIPMENT, INDUSTRIAL	
Baking Ovens	
6 weeks	10 to 24 weeks
Booths, Dry Type Spray; Water Wash	
6 weeks	— —
CONTAINERS	
Bags	
Cellophane	8 to 12 weeks
Glassine	4 weeks
Parchment	12 to 16 weeks
Preprint Wax	4 to 6 weeks
Window	4 to 6 weeks
Bags, Paper	
30 - 60 days	90 - 150 days
Bags, cotton & burlap	
10 to 30 days	30 to 90 days
Boxes, Corrugated	
— —	3 to 4 weeks
Boxes, Solid Fibre	
8 weeks	Spl. orders not accepted
Boxes, Fibre, Cleated	
12 weeks	2 to 5 months
Cleated Plywood, Shook	
8 weeks	6 weeks
Box Shooks	
— —	2 weeks
Boxes, Crates, Wirebound	
— —	6 weeks
Boxes, Wooden	
— —	4 weeks
Crates, Wooden	
— —	2 weeks
Lumber; Shavings	
Immediate	

Standard Products	Special Order
Cooperage, Tight, Slack	
2 to 4 weeks	12 weeks
Paper Tubes, Cores, Cans	
— —	3 weeks
Fibre Drums	
2 to 3 weeks	— —
ELECTRICAL	
Cables, Wire	
4 to 6 weeks	4 to 6 weeks
Cable, Insulated	
5 to 6 months	5 to 6 months
Cables and Wire	
4 to 6 weeks	4 to 6 weeks
Bare Copper Wire	
3 to 4 weeks	3 to 4 weeks
Weatherproof Wire	
3 to 4 weeks	3 to 4 weeks
Wire, Flat, Resistance	
3 to 4 weeks	8 to 10 weeks
Wiring Devices	
3 months	6 to 8 months
Conduits, Flexible	
1 to 5 months	1½ to 6 months
Raceway-Fittings	
60 days	90 days
MOTORS	
Integral HP Motors, 1 to 5 HP	
Stock to 60 days	3 to 6 months
Open Gen. Purpose Induction Motors (1-200hp)	
Stock to 3 months	3 to 6 months
Fan-cooled Gen. Purpose Induction (1-25hp)	
Stock to 3 months	3 to 6 months
Open Gen. Purpose d-c Motors and Generators	
Stock to 3 months	6 to 8 months
Fan-cooled or Encl. Non-Vent. d-c Motors	
— —	6 to 8 months
Open Motor Generator Sets	
— —	6 to 8 months
Large a-c Alternators and Synchronous Motors	
— —	8 to 9 months
Fractional hp	
1 to 5 months	2 to 5 months
Motor Control	
75% in stock	40 weeks
ELECTRODES	
3 to 4 weeks	6 to 8 weeks
ELECTRONIC EQUIPMENT	
Geiger-Muller Equipment	
1 week	60 days
ENGINES, GASOLINE	
Marine, Water Cooled	
Stock to 4 weeks	6 weeks
Light & Power, Air Cooled	
Stock to 30 days	6 weeks
Light & Power, Water Cooled	
Stock to 8 weeks	3 months
FASTENERS	
Cut Tacks & Nails	
1 month	— —
Small Wire Nails & Brads	
8 to 10 weeks	
Copper Tacks & Nails	
2 to 3 weeks	
Furniture Nails, Thumb Tacks	
3 to 4 months	— —
Bolts, Stove	
6 to 8 months	— —
Small Bolts, ½ x 6 and under	
8 to 10 weeks	— —
(Larger 3 to 4 weeks)	
Nuts	
6 to 8 months	— —
Nuts, Semi-Finished	
2 to 3 months	— —
Milled Specials	
— —	2 to 3 months
Screws	
4 to 5 months	4 to 5 months
Hex Head Cap Screws ¼-⅜"	
1 to 3 months	2 to 4 months
Hex Head Cap Screws 7/16 & ½"	
Stock to 4 months	2 to 4 months
Thread Cutting Screws	
14 weeks	14 weeks

Standard Products	Special Order
Sems Fastener Units to No. 12	
14 weeks	14 weeks
Set Screws, All Dia.	
1 to 2 months	— —
Wood Screws	
2 to 3 months	3 to 4 months
Machine Screws	
3 to 6 months	6 to 7 months
Machine Screw Nuts	
4 to 12 months	— —
Sheet Metal Screws	
10 to 12 months	5 to 6 months
Headless Set Screws	
6 to 8 weeks	6 to 8 weeks
Recessed Head Machine Screws	
4 to 6 weeks	3 to 7 months
Recessed Head Wood Screws	
14 weeks	14 weeks
Rivets	
4 to 8 weeks	8 to 12 weeks
Washers, Flat	
Indefinite	
Lock Washers	
1 to 2 weeks	4 to 6 weeks
Wood Screws	
1 to 2 months	2 to 6 months
FITTINGS	
Brass, Bronze	
Stock to 12 months	30 to 60 days
Copper or Bronze, Solder Type	
Stock to 60 days	— —
Tube Fittings, Brass & Steel	
Stock to 1 month	5 weeks
Malleable Iron	
Small quantities 60 days to indefinite Large quantities 9 months to indefinite	
Malleable & Cast Iron Screwed Pipe	
Immediate to 4 months (depending on item)	
Stainless Steel Fittings	
60 to 90 days	90 to 150 days
Steel Tube Fitings	
Stock to 60 days	2 to 4 months
FORGINGS	
— —	3 to 4 weeks
FURNACE — OVENS	
Electric Heat Treating	
3 to 5 weeks	6 to 8 weeks
Electric Salt Bath	
6 to 8 weeks	10 to 12 weeks
Ovens, Industrial	
5 to 7 weeks	6 to 9 weeks
Furnaces, Industrial	
4 to 6 weeks	8 to 12 weeks
GASKETS-PACKINGS	
Leather	
2 weeks	4 weeks
Oil Seals	
2 weeks	12 weeks
Felt Products	
2 to 3 weeks	3 to 4 weeks
Molded Parts	
3 weeks	4 to 6 weeks
Die-Cut	
Stock	2 to 3 weeks
Blackrock Rings	
	5 to 7 weeks
Single Jacket Metal Asbestos	
— —	1 to 12 weeks
Ring Joint Stainless Carbon	
6 weeks	8 to 10 weeks
Spiralwound Stainless & Carbon Steel	
1 week	2 weeks
GAUGES	
2" and 2½" Pressure	
Immed. to 45 days	3 months
Ammeters	
Stock to 45 days	3 months
Ind. Thermometers (bimetallic)	
1 month	1 month
Liquid Level Gauges	
Stock to 45 days	90 days
Oxy-Acetylene; Vacuum; Compound	
30 days	60 days

Standard Products	Special Order
Recording Gauges & Thermometers	
4 to 6 weeks	6 to 8 weeks
Pressure, Temperature Controls	
4 to 6 weeks	6 to 8 weeks
Recording & Controlling Pyrometers	
4 to 6 weeks	8 to 10 weeks
Linear Measuring Air Gauges	
1 to 3 weeks	5 to 8 weeks
Linear Measuring Electronic Gauges	
1 to 2 weeks	5 to 8 weeks
Lin. Measuring Dial Ind. Gages	
Stock to 2 weeks	5 to 8 weeks
GEARS	
2 to 8 weeks	10 months
According to size and type	
Differentials	
— —	10 months
GRINDERS-BUFFERS	
Portable & Bench Grinders	
9 months	
GRINDING WHEELS	
1week to 3 months	3 to 8 weeks
HEATERS, UNIT	
1 month	— —
HOSE, FLEXIBLE, ASSEMBLIES	
Stock to 2 weeks	30 to 90 days
HOSE	
Fire Hose	
3 weeks	— —
Hand Hose	
6 weeks	— —
Molded Braided	
3 weeks	— —
Machine Hose	
8 weeks	— —
Wrapped Hose	
Stock to 8 weeks	Stock to 8 weeks
Rubber Hose, All Types	
Stock to 30 days	30 days
INSULATION	
Mineral Wool Industrial	
1 to 3 months	— —
LEAD	
Pipe and Sheet	
2 to 3 weeks	4 to 8 weeks
MACHINE TOOLS	
Standard Lathes, Milling Machines, Shapers	
Immediate from Distributors; Factory 45 days	
MAGNESIUM	
Sheet 4 weeks	
MATERIAL HANDLING EQUIPMEST	
Industrial Storage Batteries, Lead acid	
Stock to 4 weeks	6 to 12 weeks
Casters, Truck	
4 weeks	
Casters, Semi Steel Plate	
Immediate to 3 weeks	— —
Casters, Welded Steel Plate	
3 months	2 months
Assembly Conveyors, Belt	
3 weeks	10 weeks
Conveyors, Belt	
3 to 6 weeks	
Conveyor Belting	
3 weeks	Stock to 4 weeks
Conveyor Belting, Rubber	
10 weeks	6 to 7 months
Conveyors, Coal	
4 to 6 weeks	10 to 12 weeks
Conveyors, Gravity, Wheel or Roller	
1 to 4 weeks	— —
Conveyors, Inclined Belt, Stationary, Horizontal	
6 weeks	12 weeks
Elevators, Bucket	
4 to 10 months	5 to 18 months
Elevators, Hand	
1 month	4 to 6 months
Elevator Belting, Rubber	
10 weeks	6 to 7 months
Elevators, Portable Hand	
3 weeks	6 weeks
Elevators, Portable, Electric	
3 months	6 months

Standard Products	Special Order
Elevators, Electric	
2 months	4 to 6 months
Elevators, Portable, Tiering	
1 to 4 months	2 to 7 months
Trucks, Hand	
Immediate to 30 days	
Jack & Skid Systems	
4 to 6 weeks	60 to 90 days
Hand Lift Trucks	
Stock to 30 days	30 to 60 days
Stake and Rack	
4 to 10 weeks	4 to 5 months
Skids	
28 days	30 to 60 days
MOTORIZED LIFT TRUCKS	
Stationary Platform	
30 days	60-90 days
Low-lift Platform	
10 to 30 days	30 to 60 days
Low-lift Pallet	
10 to 30 days	30 to 60 days
High-lift Platform	
10 to 30 days	30 to 60 days
Tilting and non-tilting Fork	
10 to 30 days	30 to 60 days
Tractor	
10 days	30 to 60 days
POWER INDUSTRIAL TRUCKS	
Tractors, Gasoline Industrial	
1 to 2 months	2 to 5 months
Tractors, Electric Industrial	
3 to 6 months	8 months
Trailers, Factory Warehouse	
8 to 12 weeks	16 to 24 weeks
Platform Trucks (Stake Trucks)	
5 months	10 months
Lift Trucks, Electric (Platform)	
1 to 5 months	6 to 10 months
Fork Truck, 2,000# cap.	
Stock	60 days
Fork Truck, 4,000# cap.	
3 to 4 months	6 months
Fork Truck, 6,000# cap.	
4 months	6 months
Low Lift Platform, 6,000# cap.	
2 months	6 months
Fork, 7,000 to 16,000#	
4 to 9 months	10 to 12 months
Baggage Trucks	
10 months	12 months
Crane Trucks	
1 to 5 months	6 to 8 months
Dump Truck, Gasoline	
90 days	90 days
PIPE	
Pipe, Fabricated	
1 month	Carload, 3 to 4 mo. LCL, 6 to 8 weeks
PIPING	
Exhaust and Blow	
— —	1 to 3 months
Steel, Welded, Riveted	
3 months	Indefinite
Prefabricated Piping	
Indefinite	
PLASTICS	
Molds; begin deliveries	14 to 16 weeks
PUMPS	
Centrifugal	
3 to 15 weeks	8 to 24 weeks
Dry Vacuum to 105 cf	
Stock to 2 months	— —
200 to 700 cu. ft.	
3 to 5 months	— —
Liquid Pumps	
1 to 3 months	3 to 6 months
Turbine	
Stock to 4 weeks	6 to 24 weeks
RETAINING RINGS	
Stock to 3 weeks	12 to 14 weeks
RUBBER PRODUCTS	
Coated Fabrics	
2 weeks	6 weeks

Standard Products	Special Order
Extrusions	
1 week	3 weeks
SANDERS & POLISHERS	
1 year	— —
SAWS	
6 months	— —
SCALES	
Platform, Portable	
Stock to 2 months	6 to 12 months
Truck	
Stock to 6 months	6 to 11 months
Platform Dormant	
Stock to 6 weeks	6 months
Crane	
Stock to 3 months	6 months
Counting, Portable & Bench	
Stock to 3 months	4 to 6 months
Automatic Batching	
— —	12 months
Miscl. Industrial Types	
8 months	10 months
SCREW MACHINE PRODUCTS	
Brass, Aluminum, Steel	
— —	2 to 3 weeks
SPRINGS	
Extension, Compression, Torsion	
2 to 4 weeks	1 to 8 weeks
Spring Stampings	
— —	90 to 150 days
Flat Springs and Small Wire Forms	
6 to 8 weeks	1 week to 4 months
STAMPINGS	
Small Metal	
2 to 3 months	1 to 2 months
Specialties, Pressed Metal	
— —	3 months
STEEL	
"On a quarterly quota basis"	
STEAM CLEANERS	
3 weeks	6 weeks
SPEED REDUCERS	
4 to 6 weeks	10 weeks
SPROCKETS	
Stock	2 to 4 weeks
Cut Tooth Steel	
6 to 12 months	— —
Cut Tooth Cast Iron	
8 to 15 months	— —
Roller Chain	
1 to 4 weeks	6 to 12 weeks
Silent Chain	
2 to 4 weeks	4 to 8 weeks
TANKS	
1 week	4 weeks
TAPES	
Electric	
Stock to 2 weeks	4 to 6 weeks
Cloth Back	
Stock to 2 weeks	4 to 6 weeks
TEXTILE EQUIPMENT	
12 months	18 months
Textile Finishing Equipment	
12 months	16 months
TOOLS	
Drills	
6 months	
Steel Marking	
1 to 3 weeks	1 to 5 weeks
Twist Drills	
1 to 2 weeks	3 to 4 weeks
Reamers	
1 to 3 weeks	4 to 5 weeks
TRANSMISSION	
Belting	
Stock to 3 weeks	2 to 6 weeks
Clutches	
Stock to 5 weeks	— —
Indexing Clutches	
3 to 6 weeks	6 to 10 weeks
Friction Clutches	
4 to 6 weeks	4 to 6 weeks

Standard Products	Special Order
Couplings	
Stock	30 days
Flexible Chain Couplings	
Stock to 4 weeks	6 to 8 weeks
Collars	
Stock to 2 weeks	3 to 4 weeks
Pulleys, Steel	
2 months	3 months
Pulleys, Cast Iron	
4 to 6 weeks	4 to 6 weeks
Pulleys, Wood	
1 month	2 months
Pillow Blocks	
Stock	2 to 3 weeks
Motor Bases	
1 month to 6 weeks	10 weeks
Shaft Collars	
Stock to 6 weeks	2 to 10 weeks
1⅝ to 3¼ A&B Groove Sheaves	
Immediate	— —
Spl. Steel Sheaves to 5¼	
— —	30 days
Sheaves, Cast Iron	
1 month	2 to 3 months
Sheaves, Steel	
1 month	2 to 3 months
V-Belt Sheaves	
Stock	4 weeks
Speed Reduction Units	
Stock to 1 month	3 months
TUBING	
Steel—Monel—Nickel	
2 to 4 weeks	3 to 5 weeks
Aluminum	
4 weeks	— —
Alloy	
4 to 6 weeks	— —
Stainless Seamless and Welded Tubes	
2 months	4 months
Seamless, Hot Finished	
8 months	— —
Seamless, Cold Drawn	
6 months	— —
Boiler Tubes	
3 to 4 months	— —
TUMBLING BARRELS	
1 to 2 months	Indefinite
VALVES	
Bronze, Threaded	
Stock to 60 days	45 to 90 days
Valves, Iron	
Stock to 60 days	2 to 3 months
Valves, Steel	
Stock to 90 days	2 to 3 months
Valves, General	
Stock to 30 days	60 days
Stainless Steel	
2 to 3 months	120 days and up
WIRE	
Stainless Steel Wire	
4 to 6 weeks	5 to 6 months
Carbon Steel Wire	
3 weeks to 5 months	1 to 7 months
Chain Link Fence	
4 to 5 months	
Gas Welding Wire	
5 to 6 months	
Card Wire	
6 to 8 weeks	10 to 12 weeks
Wire Forms	
— —	3 to 4 months
Iron	
20 weeks	— —
Platinum	
10 weeks	— —
WIRE CLOTH	
Copper, Bronze, Aluminum, Steel	
10 to 12 months	Beyond 10 months
Standard Hardware Cloth	
3 to 4 months	3 to 4 months
Coarse Industrial Cloth	
1 week to 3 mos.	2 weeks to 3 mos.
Fine Industrial Cloth	
1 to 12 weeks—Some immediate	1 week to 3 months

Soap and Glycerine Industry Establishes

PURCHASE INFORMATION BUREAU

Lewis A. Jones heads new activity designed to get maximum value from purchase dollars

AT THE annual meeting of the Association of American Soap & Glycerine Producers, Inc., held in New York City on January 28th, announcement was made that a Purchase Information Bureau has been established by the Association, under the direction of Lewis A. Jones. The new activity, which is organized on the model of similar activities in the American Meat Institute and other industry groups, was authorized by the Board of Directors in December. A committee consisting of purchasing officers of representative member companies, large and small, was appointed to study the project and set up the new service. Under the chairmanship of Eugene A. Moss, Vice President of Swift & Company, Chicago, this committe included: B. J. Adams of John T. Stanley Co., New York; J. J. Guiney of Lever Brothers Co., Cambridge, Mass.; H. A. Haller of Procter & Gamble Co., Cincinnati; T. A. Hoppe of Colgate-Palmolive-Peet Co., Jersey City, N. J.; Z. D. Sappenfield of Allen B. Wrisley Co., Chicago; H. W. Schnell of Lightfoot Schultz Co., Hoboken, N. J.; L. A. Shepherd of Swift & Co., Chicago; C. L. Weirich of The C. B. Dolge Co., Westport, Conn.; and R. H. Young of Davies-Young Soap Co., Dayton, Ohio.

Purpose of the Purchase Information Bureau is to assist the 200 member companies to purchase maintenance and operating supplies used in the industry so as to insure reliable quality from responsible sources, and to make purchase dollars go farther. Raw materials such as fats, oils, and alkalies, will not be included in the program, but a wide variety of non-product items will be considered, including packaging supplies such as drums, shipping containers, and labels; factory supplies such as motors, electrical fittings, valves, and pipe fittings; automobile accessories and tires; and office supplies.

The service is to be voluntary, and without cost to members. No actual purchasing will be done, but purchase arrangements will be negotiated on the basis of potential industry-wide use, within the scope of legal limitations on collective action. Members will be informed regarding such purchase arrangements, and may participate in them to the extent they may wish to do so and see advantage in them.

Purchases will be made individually by members from individual suppliers, and goods will be shipped, billed, and paid for direct. The only deviation from normal procedure is that copies of the orders are to be endorsed by the Purchase Information Bureau, certifying the buyer's membership in the Association, and records will be kept at the central office indicating the extent to which the service is used. Mr. Moss stressed the fact that maximum benefits, both individual and collective, will depend largely on the extent of such participation by the members.

Specific advantages that may be expected from such a plan are:

1. Assistance in the procurement of hard-to-get items.
2. Savings in cost.
3. Better deliveries.
4. Valuable suggestions on purchasing organization and procedure based on experience of other members.
5. The advantage of having "a New York buying office".

Further extension of the service is envisioned to include, from time to time, suggestions regarding inventory control, purchasing and receiving procedure, and related topics. It is probable that a periodical Bulletin will be the means of keeping members informed on the Bureau's activities. While the smaller companies, in which purchasing receives less specialized attention as a rule, may be the greatest beneficiaries of the program, much interest has been expressed by the larger companies as well, and active participation is expected from both groups.

Lewis A. Jones, who has been appointed to head the Bureau, has a broad background of purchasing experience and commands the respect and confidence of all purchasing men. He is a past president of the National Association of Purchasing Agents, and was awarded the Shipman Medal in 1932 for distinguished service to his profession. He was for many years Vice President and Director of Purchases of the New York Power & Light Corporation, and Director of Purchases for the Mohawk-Hudson Power Corporation, later serving in a similar capacity with the General Cable Corporation and its eight manufacturing plants. During the war he was called to Washington as a consultant to OPA and WPB. There he organized the first industry advisory committees, which became the pattern for hundreds of such committees set up by General Knudsen and Donald Nelson. More recently he has been associated with the Bureau of Federal Supply in its program of stockpiling strategic and critical materials. Immediately prior to his present appointment he was engaged as a special purchasing consultant to the United Nations organization.

In speaking to the Association meeting about the new Bureau, Mr. Jones said:

"Purchasing agents have to buy, and salesmen have to sell, only one thing—*value*. The purpose of our new Purchase Information Bureau is to enable our members to get the greatest value out of their purchase dollar. To do that, we must also give a value to the vendor. That value to the vendor must come primarily from our own well organized cooperation in our purchase plan.

"Our members, both large and small, can in a great many ways make contributions toward success, and the return value to every one of us will be shown from time to time as the work progresses. My own sure conviction is that success or failure in the new service will depend 99% on our own cooperation, both in spirit and in fact.

"Vendors are much interested in our new plan, and want to work with us. One internationally known house told me that they have for years tried to find a way to reach our in-

(Please turn to page 342)

NEW DECISIONS ON CONTRACT LAW

• *By Leo T. Parker*

DURING the year 1947 the higher courts rendered many outstanding decisions involving buyers and sellers. The details of these decisions for the complete year are now available. We shall briefly review these important and outstanding decisions with a view of imparting valuable legal information which will assist readers to save many thousand dollars in 1948. Because of obvious space limitations, some of the hereinafter decisions are very briefly explained, but readers who desire further details of any specific law suit may refer to the citation, and obtain and read the complete decision in any good library.

First, however, we shall consider for benefit of readers an interesting letter recently received from a purchasing agent, as follows: "We have a law suit on our hands. A lawyer named Steele sold merchandise to us for $12,500. We took immediate possession of the merchandise and trusted Steele to fill in the certificate of title and have it transferred and recorded. Instead of doing this, Steele used the certificate to borrow $9,500 from a bank and through use of this certificate gave a mortgage on the goods. Now the bank is suing us and demands that we pay this $9,500 or give possession of the merchandise. Can the bank win this suit?"

Stated more simply, this reader purchased merchandise valued at $12,500 from Steele, and received delivery of the merchandise, but Steele kept the certificate of title and falsely used it to borrow money from a bank. This same relative legal situation has in the past very often arisen where a purchaser of merchandise shipped via common carrier takes as evidence of ownership a bill of lading, or where a purchaser takes as evidence of ownership a warehouse receipt for merchandise stored in a warehouse.

Seller is Responsible

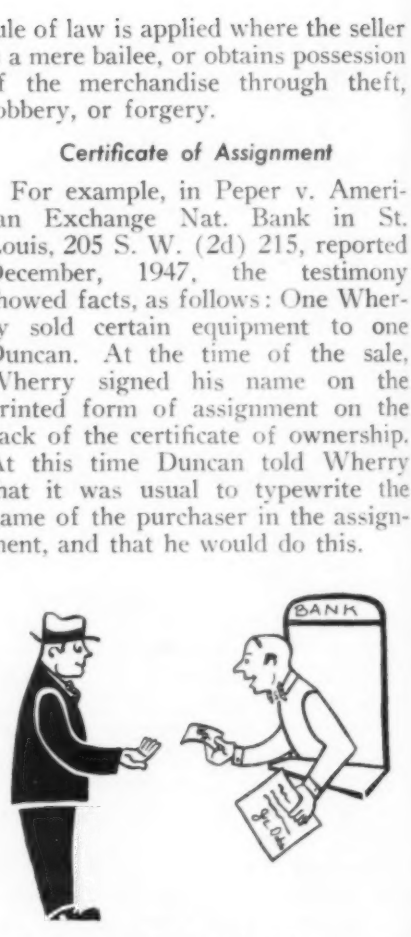
Actually the courts hold that a common carrier is not responsible for falsity of a bill of lading, as to contents, quality and value of merchandise. Likewise the courts have very clearly established the law that a warehouseman is not responsible if the goods represented by a warehouse receipt are not in the packages listed in the warehouse receipt. Hence, one who purchases goods represented by either a bill of lading or warehouse receipt must look solely to the seller if the goods that the purchaser believed he purchased are not forthcoming. Few purchasers realize this responsibility. Hence, this is an important "legal pitfall" to avoid during 1948.

Now let us consider the case presented by our reader in which Steele delivered the actual merchandise to the purchaser, but kept in his possession the certificate of title and used it to borrow money from a bank. In this circumstance the bank is in a similar legal position as a purchaser who paid for merchandise represented by a bill of lading or a warehouse receipt, and later discovered that the goods are not in possession of the carrier or warehouseman.

Hence, according to a recent higher court the bank cannot take possession of the merchandise from this reader. This is so because a person cannot mortgage merchandise he does not own, so as to defeat the valid and legal claim of the original owner. Moreover, the fact that the bank acted in good faith will not avail, as against legal rights of the real owner of the merchandise. This rule of law is applied where the seller is a mere bailee, or obtains possession of the merchandise through theft, robbery, or forgery.

Certificate of Assignment

For example, in Peper v. American Exchange Nat. Bank in St. Louis, 205 S. W. (2d) 215, reported December, 1947, the testimony showed facts, as follows: One Wherry sold certain equipment to one Duncan. At the time of the sale, Wherry signed his name on the printed form of assignment on the back of the certificate of ownership. At this time Duncan told Wherry that it was usual to typewrite the name of the purchaser in the assignment, and that he would do this.



Later, one Peper, desiring to purchase similar equipment called at Duncan's place of business, and Duncan showed him the equipment. Peper inspected the equipment and purchased it at the price $1,400, plus $28 sales tax. At the time the deal was closed, Duncan handed the certificate of ownership to Peper. It was in the same condition it was when he received it from Wherry. Duncan inserted his own name in the printed form of assignment on the back of the certificate of ownership, and used the certificate to obtain a

loan from a bank on the equipment he had sold to Peper.

In subsequent litigation the higher court held that Peper is the legal owner of the equipment and that the bank cannot take it from him. This court said:

"We hold that when Wherry received full payment and delivered the equipment to Duncan, together with the certificate of title, with an assignment on the back duly signed, and with authority to Duncan to typewrite his name in the assignment, Wherry's ownership then and there ceased. . . . Duncan, instead of securing a new certificate in Peper's name, proceeded to steal the certificate. . ."

In other words, this court held that technically Duncan stole the certificate from Peper, and since no person who steals merchandise has a valid legal title, it is readily understandable that the court held that the bank had no legal title or interest in the merchandise represented by the certificate of title technically stolen from Peper, the owner of both the merchandise and certificate of title.

Negligence Costs Money

For comparison, see National Bond & Investment Company v. Mound City Finance Company, 161 S. W. (2d) 664. In this case the seller of the merchandise signed the certificate of ownership, but he left the space blank where the purchaser must sign his name. In other words, it was an assignment in blank, but otherwise complete. The buyer took possession of the merchandise and the certificate of ownership. Later he placed a mortgage on the equipment, and then *afterwards* sold it.

The new buyer of the equipment took possession of it but did not know that the mortgage was given until the holder of the mortgage sued for possession of the equipment.

The new or last buyer argued that the mortgage was not valid because the first buyer's name did not appear as assignee from the original owner in the space provided in the form of assignment on the certificate of ownership.

However, this court held that the only legitimate inference that could be drawn was that the original owner and seller endorsed and delivered the certificate to the first purchaser, intending to convey title to him, with implied authority to the first purchaser to complete the assignment form by causing his name to be inserted therein as assignee, and his failure to do so did not invalidate the mortgage.

In this case the court said that where two innocent persons are negligent, and a loss results, the one whose greater degree of negligence caused the legal entanglement must suffer the loss. Hence, although the first purchaser negligently failed to insert his name in the certificate of title, yet he had authority to do so and it was the legal duty of the last purchaser to search the mortgage records and know that the equipment was not mortgaged before he purchased it.

No Knowledge

An important point of law, relative to holders of negotiable contracts, was decided in Garst v. General, 201 S. W. (2d) 757. Here it was shown that one Garst signed a conditional sales contract having attached a negotiable note for $689.85 payable to the seller. The note provided for payment in fifteen monthly installments of $45.99. This note was sold to General Purchase Corporation.

Garst refused to pay the note, contending that $146.85 was fraudulently inserted.

The higher court held that Garst must pay the full amount due the General Purchase Corporation, and said:

"The note was negotiable, and there is no evidence that General had knowledge of any infirmities."

For comparison, see First Nat. Bank of Chippewa Falls v. Buchholz, 18 N. W. (2d) 771. Here it was shown that a building owner signed a conditional sales contract for purchase of a furnace. The building owner paid $400 down and executed notes payable to the seller for the balance payable in monthly installments. The notes were attached to and were a part of the contract of conditional sale. Immediately thereafter, the seller assigned the contract to a bank, together with the notes.

The contract contained a guarantee clause which the buyer claimed that the seller had breached. The purchaser refused to pay the balance due, and the bank filed suit to collect the amount due on the notes. The bank defended the suit on the grounds that it knew nothing about the guarantee given the building owner by the seller. However, the higher court decided that the bank assumed exactly the same liability on the guarantee as the seller. This court said:

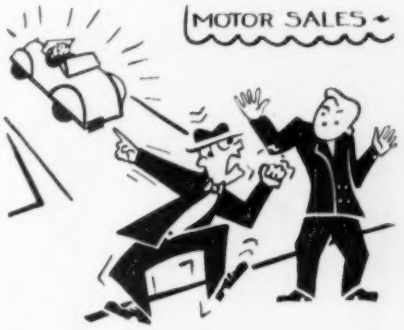
". . . Where one takes as endorsee and assignee a promissory note and a conditional sales contract representing a transaction for which the note was given and before the consideration has passed, he takes such note with notice of a condition to liability on the instrument. . ."

Hence, in this case the court held that since the guarantee was included in the contract, attached to the notes, the bank knew the exact agreement between the buyer and seller and therefore automatically became liable for the seller's breach of the contract.

Seller Must Deliver

We shall now briefly review several 1947 cases in which the higher courts expressed unusual and interesting law pertaining to legal duties of sellers of merchandise, and their liabilities for contract breach.

According to a recent higher court an automobile dealer must deliver a purchased new automobile "within a reasonable time". This is so although the purchaser has no used car to trade in.



For example, in Moss v. Conart Motor Sales, Inc., 72 N. E. (2d) 158, the testimony showed facts, as follows: One Moss signed a contract to purchase a new Plymouth Club Coupe from the Conart Motor Sales. He paid $50 down, and waited 18 months without getting delivery of the automobile. Then the purchaser filed suit and asked the court to compel the seller to deliver the car. The higher court ordered the seller to deliver the car to Moss, and said:

"The defendant (seller) should specifically perform its contract with plaintiff."

Nevertheless, it is important to observe that this court held that sellers are entitled, within reason, to give preference to doctors, returned veterans, and old customers, before being duty bound to deliver a car to a new customer.

Also, see Moskovitz v. White Bros., Inc., Sup., 166 N.Y.S. 15, 16, where a seller refused to deliver merchandise on the plea that his salesman was not authorized to make a valid contract. This court held:

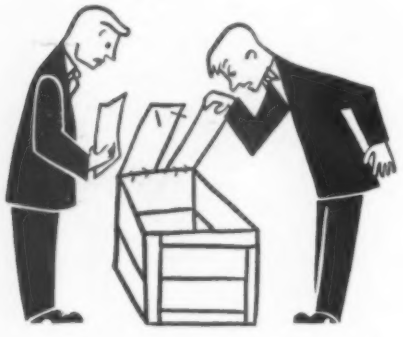
"The signature of defendant's salesman to an order blank, furnished for selling, and marking the price and the deposit, containing all the terms of the sale, implies an acceptance of the order and a reciprocal agreement to sell."

Quality Must Comply

When the contract is verbal, the court will decide the liability of a seller who breached it.

See Consumers Cooperative Ass'n v. Sherman, 25 N. W. (2d) 548, where a seller agreed to deliver 20,000 V-1 cartons, being fibre cartons for the packing of dehydrated food.

The seller delivered V-30 cartons. Further testimony showed that a V-1 carton is of solid fibre with an average bursting strength of 750 pounds per square inch when dry and 600 pounds when wet; and that a V-30 is a much lighter carton of corrugated fibre with a bursting strength of 400 pounds when dry and 150 pounds when wet.



The purchaser sued for damages equal to the difference in the market value of the cartons delivered, and those specified in the contract.

The higher court held the seller liable and said:

"The defendants (seller) cannot require plaintiff (buyer) to accept other and different cartons of inferior or less quality although usable for the same purpose unless the plaintiff agrees to accept such in place thereof, and no such agreement is shown."

Also, see 15 Am. Jur., Damages, 59, page 464, and Knoechelmann v. Knochelmann, 47 S. W. (2d) 534. This court held that when a buyer breaches a contract of sale the seller may recover damages equal to the profits he would have earned had the purchaser accepted and paid for the merchandise. Also, this court held that when a seller breaches a valid contract the purchaser may buy the merchandise on the open market, and the seller is liable in damages equal to the difference between the contract price, and the price the purchaser was compelled to pay.

Considerable discussion has arisen over the legal question: If a purchaser contracts to purchase merchandise to be specially manufactured, who is responsible if the manufacturer becomes bankrupt before the merchandise is accepted and paid for by the purchaser?

In Rosen v. Superior Company, 66 N. E. (2d) 29, a purchaser contracted to purchase certain merchandise from a manufacturer. The manufacturer went bankrupt before the merchandise was shipped.

The higher court held that the purchaser need not accept and pay for the merchandise.

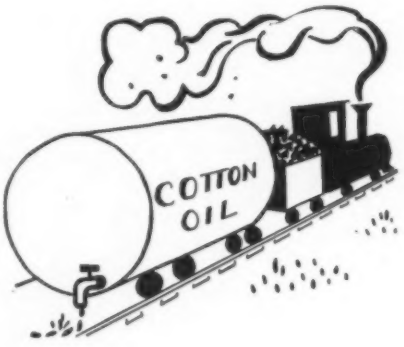
Seller Is Negligent

A seller always is liable for loss of merchandise during shipment caused by his breach to inspect merchandise or car before shipment.

For example, in Blytheville Cotton Oil Company v. Kurn, 155 Fed. (2d) 467, a contract required a seller to inspect merchandise and car before loading. He failed to properly close a screw type main outlet valve, and during transit 60,000 pounds of oil leaked out of the car. The higher court held the seller liable for the loss.

Cannot File Suit

In many states the law requires that in order to maintain a suit against a purchaser the seller must file documents of incorporation with officials of the state.



In R. J. Brown Company v. Grosjean, 180 So. 634, a seller was denied recovery in a law suit because the evidence showed that it was "doing business" in a foreign state, and that it had failed to file certain required documents with officials of the state.

No Consideration

Modern higher courts consistently hold that a mere promise is not an enforceable contract. This is so because a valid contract must have "legal" consideration, which means that both parties must agree to do something.

For illustration, in American Republics Corporation v. Houston, 198 S. W. (2d) 956, the testimony showed that one Houston wrote a letter and agreed to bear the expenses of a project, but the addressee had not agreed to do anything or perform any service for the writer.

In subsequent litigation the higher court held the Houston's agreement void, quoting:

"There is not and was not any consideration for the purported contract claimed by appellant to have been formed by the correspondence between the parties. . . ."

What Is Valid Contract?

Three elements are essential to an enforceable contract of sale: (1) An identification of the merchandise; (2) An agreement as to the price to be paid; and (3) Consent of the buyer and seller.

In Comstock v. Tarbush, 37 S. E. (2d) 925, it was shown that a purchaser paid down $1,000 on a tractor and trailer which the owner agreed to sell for $2,319.24. Later the seller decided that the equipment was worth considerably more money and refused to complete the contract.

The purchaser filed suit and the higher court ordered the seller to deliver the equipment to the purchaser, and accept $1,319.24 as full balance payment.

Didn't Get What He Bought

It is certain that if a purchaser proves that he did not receive exactly what he bought, the seller is liable in damages.

For example, in Whittemore v. Thompson Company, Inc., 73 N. E. (2d) 475, it was shown that a manufacturer of "deep freeze" units issued an advertising circular which stated in part: "30 cu. ft. stores 650 to 750 lbs. of fruit or vegetables, 1200 to 1350 lbs. of meat. . . The zero-freezing seals in all the goodness, keeps the just-picked flavor of fruits and vegetables, the tenderness and full flavor of fresh meats and poultry . . . for as long as six months to a year."

A prospective buyer told the manufacturer's vice president that he wanted a freezer in which to keep poultry and meat. The vice president "assured" the purchaser that zero was ample for his purposes, that the freezer would hold the temperature down at that point and would freeze food in a satisfactory manner. The buyer purchased a thirty-cubic-foot

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freezer. He was told "that all he had to do was connect it". The freezer was connected by an electrician employed by the purchaser. Shortly after this, the purchaser by telephone told the vice president that the temperature would not go below twenty degrees, that it was not low enough to do the work for him, and that something must be wrong. The vice president advised him that if he removed a dial cover in back, and pushed the dial counterclockwise as far as he could, he would get zero temperature. The purchaser followed instructions, and obtained "around zero temperature," but to keep that temperature the machine ran practically all the time. About a month later the motor stopped, and the food spoiled. The purchaser never defrosted the freezer and did not know that it was necessary to do so.

The purchaser sued the manufacturer to recover damages. The manufacturer urged that the advertising circular did not guarantee that the freezer would maintain a temperature of zero for six months to a year.

The manufacturer further contended that the cause of the stopping of the motor was conjectural, and might have been due to a variety of causes, such as the interruption of the electric current, faulty installation by the purchaser's electrician, or failure to defrost. Nevertheless the higher court held the manufacturer liable, saying:

"According to the testimony, the defendant's (manufacturer's) vice president told the plaintiff (purchaser) that zero was ample for his purposes, and that the freezer would hold the temperature down at that point. . . There was a breach of warranty at the outset, in that the plaintiff (purchaser) did not receive what he bought."

When Purchaser Is Liable

Now, we shall briefly review outstanding 1947 higher court cases holding purchasers liable. Unless the evidence proves conclusively that a jury's decision is based on improper testimony, the higher court will approve its verdict.

In Payne v. Foster, 26 So. (2d) 237, a seller of merchandise sued the purchaser for $150. The seller testified that the buyer paid him $300 in cash and agreed to pay $150 later, but the buyer testified that the merchandise was sold for $300 cash which he paid and, therefore, he owed nothing.

There was no witness to this conversation, but the jury believed the seller's testimony and decided that the purchaser must pay the seller an additional $150.

Sent Back Balance

According to a recent higher court a buyer may use some of the shipment and then return the balance when he discovers that the whole shipment does not equal the quality guaranteed by the seller.

For instance, in Flag Fish Company, 34 S. E. (2d) 294, it was shown that a buyer purchased 100 boxes of fish at $8 per box. On receiving the shipment, the purchaser "receipted" the invoice, in writing. He sold a considerable quantity of the fish before discovering that the fish were not the same quality specified in the contract of sale. The purchaser returned the balance of the shipment.

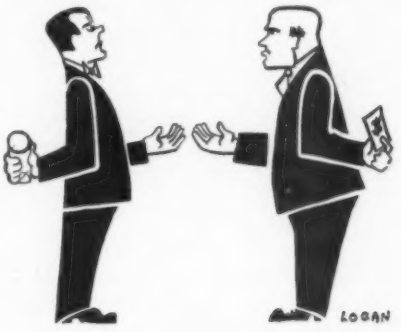
In subsequent litigation the court was required to determine whether the invoice signed by the purchaser was a valid contract, and whether the receipt signed by the purchaser was an absolute agreement which obligated him to retain and pay for the complete shipment.

This court held that the purchaser must pay $8 a box for the fish he used, but that he could not be charged for the balance. In other words, the purchaser was within his legal rights in returning the remaining cases of fish after discovering that this merchandise did not equal the quality indicated by the invoices, although he acknowledged in the signed receipts that he "accepted" the shipment.

Correspondence Contract

Letters and writings executed by a buyer and seller may be united by a court into a single contract. And once a valid contract is made, neither the buyer nor seller may cancel it.

In Gordon v. Beck & Gregg Hardware Company, 40 S. E. (2d) 428, it was shown that a purchaser wrote a letter and placed an order for merchandise. The seller accepted the order. Later the buyer attempted to cancel the order and wrote the seller that "better values at lower prices are being offered". Other letters were mailed by the buyer referring to "cancellation of our order."



The seller sued the buyer for damages amounting to the profits it would have earned had the purchaser attempted to avoid liability on the grounds that no valid contract was made. The higher court refused to agree with this contention, saying:

"We do not think that the petition showed that no contract of sale was made. All of the correspondence between the parties must be considered."

Purchaser Breached Contract

All courts agree that if one contracting party breaches a contract he cannot recover damages from the other party.

For instance, in Kirst Company, Inc., v. Mid-Atlantic Company, 158 Fed. (2d) 518, a suit was brought by a purchaser of glassware for the alleged failure of the seller to ship glass goods in accordance with orders which the seller accepted.

The testimony proved that the purchaser first breached the contract by failing to make payments on dates specified in the contract.

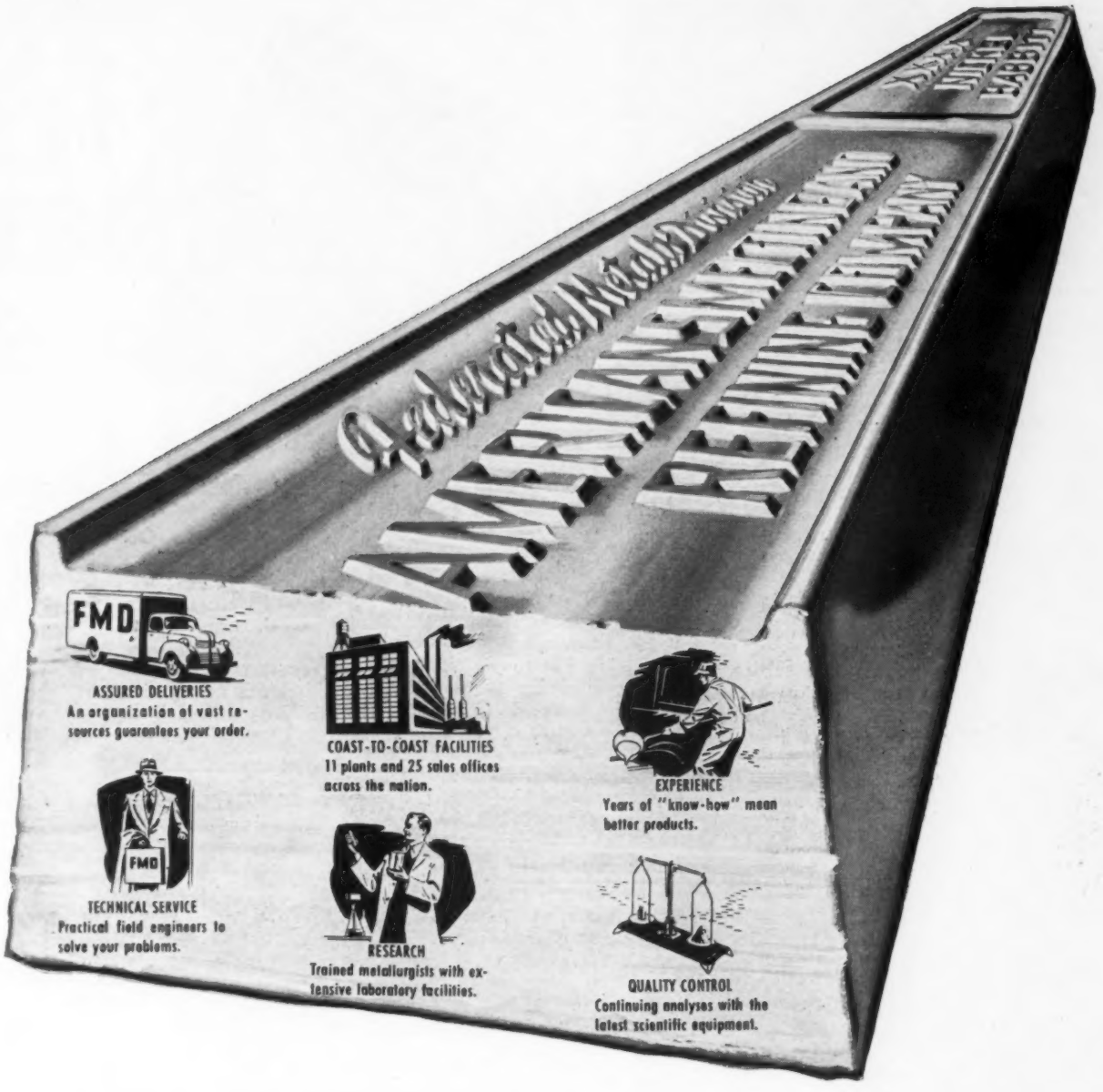
The higher court refused to allow the purchaser any damages for the seller's subsequent breach.

Arbitration Clause Valid

If contracting parties agree to "arbitrate" their legal differences, neither party may file a suit.

In Trubowitch v. Riverbank Canning Company, 182 Pac. (2d) 182, it was shown that a buyer made a written contract to purchase 3900 cases of containers. The contract contained the following provisions: "Any controversy arising out of this contract shall be settled by arbitration in New York, Chicago, or San Francisco."

The seller failed to deliver the merchandise. In subsequent litigation the higher court held that neither party can file a suit, and ask a court to settle the controversy.



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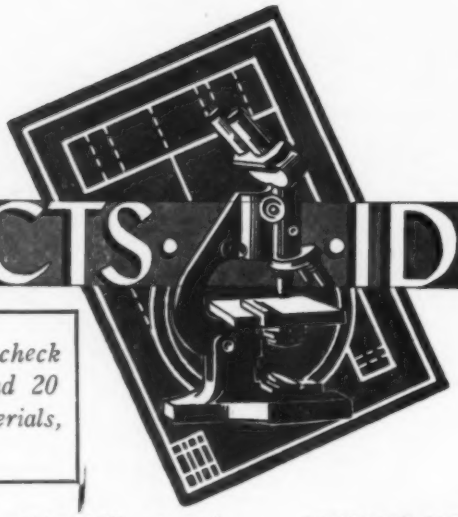


Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.

PORTABLE REPAIR SHOP

MOTORIZED portable repair shop for on-the-spot repairs, has a flexible shaft machine mounted on a compact cabinet containing 25 accessory tools and two dozen supplies. Tools and accessories include those for sanding, drilling, wire brushing, grinding, buffing, sawing, filing, waxing, etc. Power is supplied by a 1/3 hp motor, 110 or 220 volts, 60 cycle a-c. Three speeds are provided, 1400, 2400 and 4500, with V-belt drive. *Wyzenbeek & Staff, Inc., 838 W. Hubbard St., Chicago 22, Ill.*

FLEXIBLE-BLADED SCRAPER-PLANER

NON-CLOGGING hand-tool scraper planes and smooths wood or metal surfaces, and solder, in one operation. Free-moving, replaceable blades are of hardened tool steel that is said to retain sharpness of cutting edges. Blades are attached by a metal rod to a hard rubber block and move forwards and backwards wth the block, which fits the hand. The tool is 5" long by 2" wide by 1½" deep. *Swiss Laboratory, 1533 Hamilton Ave., Cleveland 14, O.*

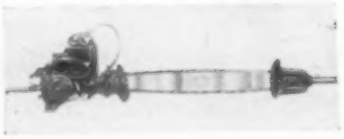
HIGH TORQUE CAPACITY MOTOR

FRACTIONAL hp motor, small enough to fit the hand, at rated voltage has a stalling torque of 75 inch-ounces. The motor is the shaded pole, induction type. With 20 watts input at 115 volt, 60 cycle a-c, the no load speed is 20 rpm on the output shaft. Three mounting studs tapped with #4 x 36 thread are provided for attaching to bracket. With de-energizing of motor, magnetic clutch prevents any over-travel of the output shaft. *T. C. Smith Mfg. Co., 920 Washington St., Springfield, Ill.*

TANNED COWHIDE WELDING GLOVES

CHROME tanned cowhide welding gloves, designated Style 804, are made of medium weight cowhide with a one piece leather back employing the wing-type thumb construction and fabric lined cuff. The wing-type thumb allows thumb action without binding or pulling across the palms, it is claimed. Exposed seams across the back of the glove have been eliminated. The gloves qualify for use with either oxyacetylene or electric arc welding. *Dept. 1727P Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.*

IMPROVED CHAIN SAW



AUTOMATIC chain lubricator and a simplified "cradle balanced" tail stock are featured in this chain saw. Volume of oil to the chain is automatic and said to be of sufficient pressure to prevent closing of the line by sawdust and other foreign matter. The oil reservoir's capacity matches that of the fuel tank. Any type of oil, including kerosene, may be used as lubricant. Operator is able to use the body of the tail stock as a fulcrum for maneuvering the saw in and out. Tail stock has an abutment plate similar to the one on the engine end. *Henry Disston & Sons, Inc., 433 Tacony, Philadelphia 35, Pa.*

MODIFIED PHENOLIC LIQUID ADHESIVES

TWO modified phenolic liquid adhesives designed for cementing metals, thermosetting plastics, wood, fabric or any combination of these, are designated Nos. 12507 and 12508. The bonding agents, when properly cured, are said to exhibit high shear and tensile strength and exceptional resistance to water, gasoline, kerosene and mineral oils. They are useful for cementing metals and laminates, for preparing metal faced, sandwich type construction, for attaching brackets and lugs to thin metal sheets etc. *General Electric Chemical Dept., Pittsfield, Mass.*

PORTABLE ELECTRIC SANDER

ILLUSTRATION shows portable electric sander side housing fenders, which are said to prevent scuffing when sanding in close quarters and to give added protection to the transmission. Air scoop gives protection in extremely wet or dusty sanding operations. Auxiliary handle attaches to top of the housing for added support when operator is sanding vertical or overhead surfaces. Literature available. *Sterling Tool Products Co., 1340 N. Milwaukee Ave., Chicago 22, Ill.*

WIPED-ON CLEAR PLASTIC FINISH

MIRROFILM is a clear, glossy plastic finish that is wiped on to protect metal surfaces, painted wood surfaces and linoleum. Manufacturer claims the finish has passed a one-year outdoor weatherometer test without chipping, blistering, peeling, flaking, chalking, checking or scaling, and with perfect retention of gloss. It can be applied with a cloth. *Wype Corp., 2214 Dolman St., St. Louis, Mo.*

MAGNIFIER & EYE PROTECTOR

TWIN-LOUPE magnifier and eye protector, made in four powers of magnification, is designed for precision work where depth perception and good magnification are necessary. It is described as having high quality lenses, angled for best efficiency, with prismatic powers scientifically computed for easy binocular vision, without distortion. Made of aluminum, the instrument leaves both hands free when in use. *Montgomery & Co., Inc., 54 Park Place, New York 7, N. Y.*

(*Please turn to page* 148)

G-E Fluorescent— the new light of industry —is ten years old April 21

ONLY 10 short years ago, the first fluorescent lamps were placed on public sale by General Electric. Since then G-E fluorescent lamps have revolutionized lighting in stores, offices, factories, homes—you see them everywhere!

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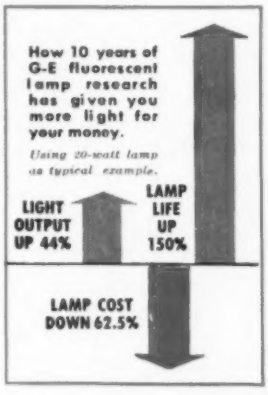
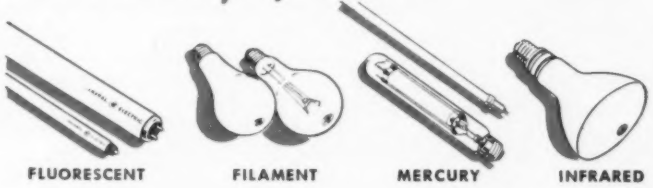

How 10 years of G-E fluorescent lamp research has given you more light for your money.
Using 20-watt lamp as typical example.
LIGHT OUTPUT UP 44%
LAMP LIFE UP 150%
LAMP COST DOWN 62.5%

This amazingly rapid improvement in fluorescent is typical of the persistent effort of G-E Lamp research to give you *more light for your money*. It is only one of the many reasons why it pays to insist on "G-E" when you buy lamps for any purpose. General Electric lamps are constantly improved by research to *Stay Brighter Longer!*

G-E LAMPS

GENERAL ELECTRIC

Whatever lamps you need



-G-E makes 'em all

LAUNDERABLE, ZIPPER SWEEPING MOP

FOR use both as a dusting mop and floor brush, this launderable sweeping mop features one-piece construction with zipper fastening. The zipper is extra heavy-duty type, rugged enough to withstand wringer-roll action. Tape ties are eliminated in the one-piece design, and assembling different mop sections is unnecessary. The fabric mop head is supported on a heavy frame of ¼" rod. Literature available. *Dept. 999, Industrial Div., Fuller Brush Co., 3554 Main St., Hartford 2, Conn.*

PIPE JOINT COMPOUND IN STICKS

STICK of pipe joint compound, known as Pipetite-Stik, is used by rubbing several strikes of the stick across the pipe threads. It spreads and fills threads when turned. It is said to withstand freon, gasoline, oil butane, propane, sulphur, ammonia, brine, acid etc. Joints can be disconnected easily years after applying, it is claimed. The compound will withstand vibration, temperature changes, deflection and pressure, and is non-toxic, according to maker. *Lake Chemical Co., 607 N. Western Ave., Chicago 12, Ill.*

PORTABLE POWER BELT CONVEYOR

STEVEDORE, Jr. is a portable power belt conveyor that can be used as a portable stacker, booster in a gravity conveyor line, or as a horizontal belt conveyor. It is available in lengths of 11', 13½' and 16', with either 10" or 16" wide belt, and is constructed of 12 gauge formed sheet steel, with a reinforced cross section. Belt is 3 ply, 28 oz. canvas duck with "Ruff-Top" rubber covered friction surface. Belt speed is 65 fpm or 94 fpm depending on motor specification. Operating in a horizontal position, the unit may be adjusted from a minimum height of 18¾" to a maximum of 64½". Literature available. *The Rapids-Standard Co., Inc., Dept. S-226, 43 Grandville Ave., S.W., Grand Rapids 2, Mich.*

PROTECTIVE COATING FOR METAL PARTS

PEELCOTE is an air-drying coating for metal parts to protect them from scratches, chips and corrosion during shipment, storage, handling and some types of fabrication. It can be applied by spray or dip methods and dries quickly and can be peeled off after serving its purpose. The coating is vinyl-based with complete chemical inertness. It is available in clear transparent or solid hiding black. *Watson-Standard Co., 225 Galveston Ave., Pittsburgh 12, Pa.*

ALL-PURPOSE TOOL KIT

ILLUSTRATION shows completely outfitted all-purpose tool kit for the installation and repair of industrial equipment and machinery, including a new 6½ lb. electric impact tool with standard accessories. Photograph shows all standard equipment plus twist drills, reamers, taps, carbide-tipped masonry drills, hole saws, screw and stud extractors, wood bits, all in sizes specified; also screw drivers and quick change chuck, square Phillips and Reed and Prince bits, together with screw driver adapter for these bits. *Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.*

NYLON DOUBLE FACED FLANNEL

"FLALON" is a 100% nylon double faced flannel, made from clipped virgin nylon fiber, crimped and heat set to give the fiber a permanent wave and resiliency. It is said to have the outer appearance of cotton flannel, carded on both sides and with the added properties of nylon. The fabric will not shrink, stretch or curl, will not support flame, and has great strength and resistance to abrasion and rot, it is claimed. *Burgess-Berliner Associates, 214 So. First St., St. Charles, Ill.*

SANDING DISC BACKING PAD

SPIRALCOOL backing pad for disc sanders is made of layers of rubber reinforced with fabric and securely bonded to a slotted iron hub. Slots in the hub force air through to the back of the sanding disc, keeping it cool under severe usage. Forced draft action through the spirals on the pad tends to keep the abrasives clean. Pad allows greater flexibility in working various shapes and contours without danger of gouging the work, and provides greater contact area of the disc, it is claimed. *The Pratt Mfg. Co., Inc., 614 E. Madison St., Fairmount, Ind.*

360° CUTTING TOOL

SPIRAL saw band has a hard cutting edge which spirals around the band, giving a 360° cutting edge so that material can be cut in any direction without rotating the work. The hardened tooth spiral permits the cutting of intricate dies. The saw can also be used for filing small radii in openings inaccessible with ordinary bench file or needle file equipment. Wood, plastics and other light material can be sawed. Spiral saws are available in .040 diameter and .074 diameter with a 15 tooth pitch. *The Do-All Co., Des Plaines, Ill.*

MEDIUM SIZE CUTTING TOOL

CUTTER, called the Manco Junior, is said to fill the need for a cutting tool between the wire cutting plier and the bolt cutter. According to the manufacturer, 50 lbs. pressure at the handles affords 2 tons cutting power at the jaws, yet tool is only 12" overall. It can be used to cut mild steel bolts up to ¼", rods, screws, rivets, nails, fencing of any hardness up to heat treated or hardened steel. Bulletin No. 12 available. *Manco Mfg. Co., Bradley, Ill.*

TRANSFORMER WITH BUILT-IN PRIMARY CIRCUIT BREAKER

DRY-TYPE transformers are equipped with built-in primary circuit breakers and thermal protection against overloads, for supplying industrial lighting and smallpower circuits from industrial power circuits. Complete in themselves, the transformers can be connected directly to open or conduit wiring, eliminating the necessity of providing junction boxes, primary switches, fuses, or circuit breakers. Ratings are available from 3 through 50 kva for 240 to 120-240 volts, 480 to 120-240 volts, or 600 to 120-240 volts single phase, 60 cycles. *Westinghouse Electric Corp., Pittsburgh 30, Pa.*

(*Please turn to page* 150)

A Challenge to real Americans

WHY is it necessary to sell America to Americans? One of the reasons is, not until now did the people of this country have to be shown that they lived in the most favored and most favorable country on earth. Where are the salesmen to do this job? Every community has its leaders who have this responsibility, not only to themselves, but to their families, their community and their country

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General Offices -- Youngstown 1, Ohio
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MANUFACTURERS OF CARBON ALLOY AND YOLOY STEELS

COLD FINISHED CARBON AND ALLOY BARS - SHEETS - PLATES - WIRE - TIE PLATES AND SPIKES - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - PIPE AND TUBULAR PRODUCTS - CONDUIT - BARS - RODS.

INDUSTRIAL SAFETY SEAT

EQUIPMENT on this industrial safety seat includes a rigid seat that hooks into a saddle and cannot become disengaged while in use, making a comfortable and less confining seat from which to work. The chest harness, attached to a clamp well up on the supporting rope or cable, does not interfere with the workman's freedom of motion while he is wearing it. When used in rescue work, it holds a helpless person upright in the saddle. When a workman has been lowered to the bottom an enclosure the supporting line can be slackened to permit his absolute freedom of action. *Buckingham Manufacturing Co., Inc., Binghamton, N. Y.*

VARIABLE SPEED CHANGER

SIZE H-6 P.I.V. gear variable speed changer is rated 20 hp. for speed variation ratios of 5 to 1 and 6 to 1, and 25 hp for speed change ratios of 2 to 1, 3 to 1 and 4 to 1. It is made in basic Type No. 1 horizontal assembly, with housing split horizontally. It is all metal, fully enclosed, and self-lubricating. Folder No. 1874-A, with dimensions, weight, ratios, horsepowers, torque ratings, available. *Link-Belt Co., 2045 W. Hunting Park Ave., Philadelphia 40, Pa.*

DIAMOND WHEEL

STEEL-bonded diamond wheel for grinding chip breaker grooves in carbide tools is said to have more than ten times the life of a resin-bonded wheel. It is also claimed to eliminate wheel dressing, and to permit three to four times faster grinding. Chip breaker grooves from .020" to .040" deep are ground in one pass. Depending on size of the wheel, from ½ hp to 1 hp is required to maintain a cutting speed of about 5,000 s.f.m. Complete details available. *The Wickman Corp., 15533 Woodrow Wilson Ave., Detroit 3, Mich.*

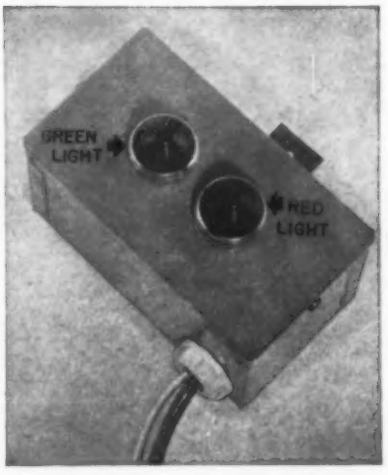
ILLUMINATED TALLY BOARD

"TALLY-LITE" illuminated tally board, which throws a light on tally sheets, is for speeding checking and entering where there is little or no light. The unit is compact and fits into hand. It has a heavy filament, 3 volt bulb, and uses 3 standard flashlight cells. The light assembly, back board and clamp are designed for heavy duty use, yet the entire unit with batteries weighs only 24 ounces. *Clyne Mfg. Co., 2519 Colerain Ave., Cincinnati 14, O.*

METALLIZING WITHOUT SURFACE PREPARATION

METCO Sprabond is a metal which may be sprayed directly on to smooth, even highly polished steel, and many other metals without any surface preparation. Only three steps are necessary in building up a worn shaft with metallizing, according to the manufacturer—rough turn shaft, apply Sprabond, and proceed with build-up. Bulletin 57 explains process in detail. *Metallizing Engineering Co., Inc., 38-14 30th St., Long Island City 1, N. Y.*

POWER LEAK DETECTOR



BUCHER leak detector and line indicator, Form A, indicates when an electrical circuit is safe or unsafe by measuring the leakage currents from the ungrounded side of the circuit. It is said to prevent electrical fire and shock hazards by warning of loss in insulation efficiency before total breakdown occurs. Reading is accomplished by means of a red light and green light. The instrument is also useful in showing the location of line switches and for determining whether a line is open or closed. Literature available. *Mosebach Electric & Supply Co., 1115 Arlington Ave., Pittsburgh 3, Pa.*

PAINT SPRAY GUN

MICRO-SPRAY paint spray gun is said to have ample air passages in the body and precision, uniform flow and size of air streams from both wing jets and center orifice, producing smooth, high-gloss finish by finer atomization and more even paint distribution. The entire head can be removed by merely removing the locking screw and lock nut. Only one fluid needle is required for all paint spraying. Spring loaded, self-adjusting packing at fluid needle and air valve stem eliminates leakage and need for adjustment. Literature available. *American Brake Shoe Co., Kellogg Division, 97 Humboldt St., Rochester 9, N. Y.*

UNBREAKABLE THERMAL OILER

VISIBLE, unbreakable, automatic oiler is made for places where space between oil hole and machinery is very limited. The feed spout is arranged to the side instead of dead center, making it possible to mount oiler where clearance is as little as ¾". Oiler automatically lubricates solid, wick, or waste-packed bearings, discharging a few drops of oil on slight temperature rise, stopping as bearing cools. Made in one, two and four ounce capacities. One-eighth inch pipe thread adapter, as shown, furnished. *Trico Fuse Co., 2948 No. 5th St., Milwaukee 12, Wis.*

DIEMAKER'S TRYOUT PRESS

THIS press, installed on a bench or on its own stand, enables the diemaker to try out dies in his own shop without using a production press. Heavy, large diameter hand wheel, in combination with the high lead thread on the ram, is said to enable the diemaker to safely move the punch in and out of the die at the rate of 1.6 inches per revolution. By whirling the wheel, 60,000 lbs. percussion pressure is available for test pieces after the die is complete. *General Manufacturing Co., 6430 Farnsworth Ave., Detroit 11, Mich.*

(*Please turn to page* 154)

It pays you, in selecting Fasteners to know how the

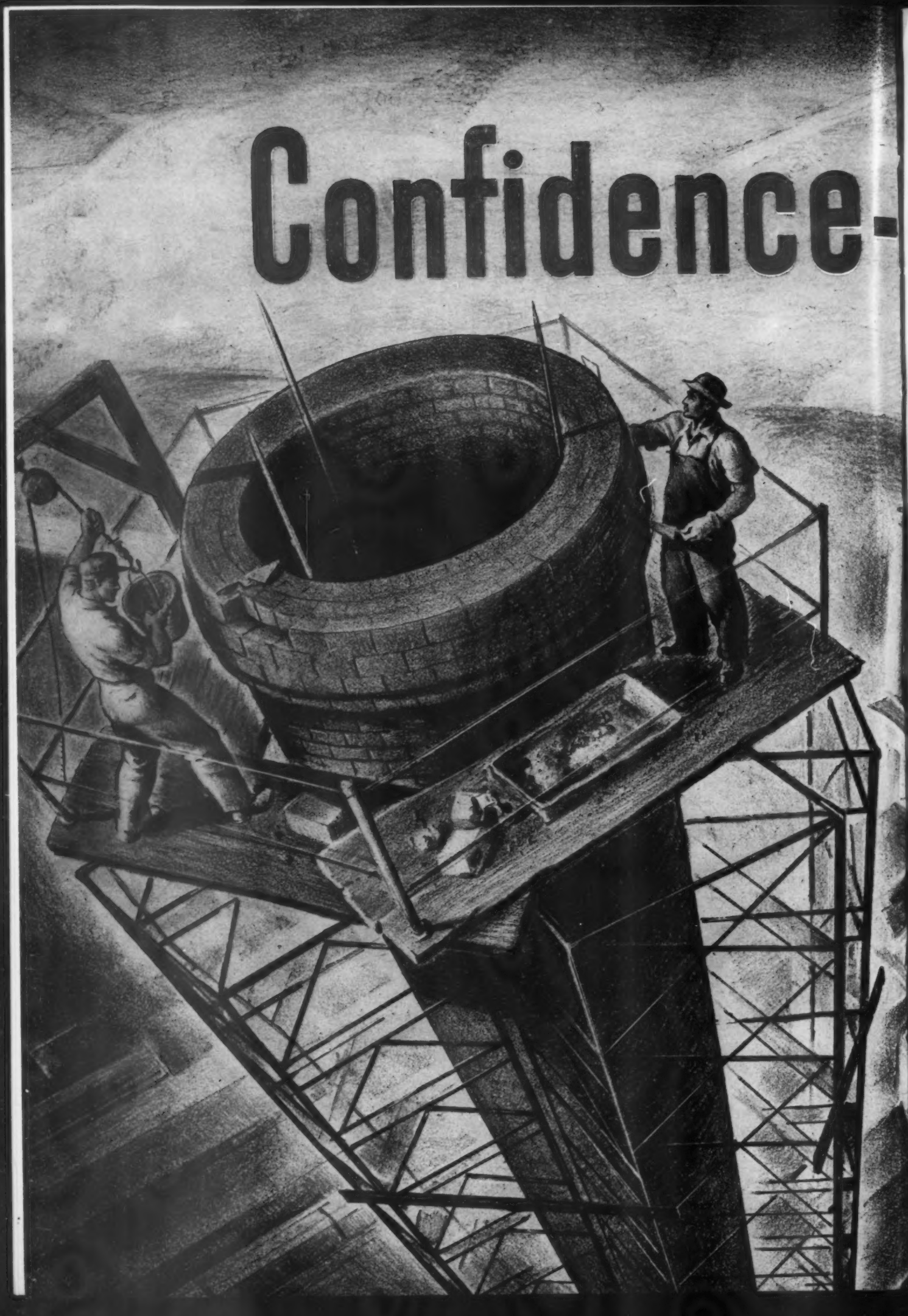
KAUFMAN DOUBLE EXTRUSION PROCESS produces Cap Screws

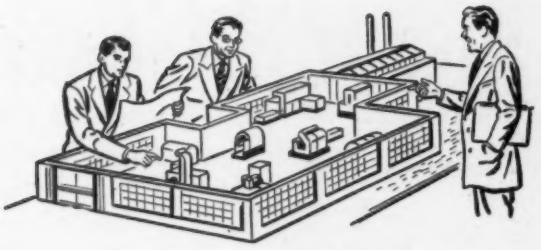
-faster
-stronger
-better in every way

You don't necessarily need to know how cap screws are *made* to judge the qualities of those you buy. But if you're interested in knowing what "Double Extrusion" is as compared to ordinary cold-heading processes, we'd like to send you this folder describing the Kaufman Process. Without obligation, of course.

CLEVELAND *Top Quality* **FASTENERS**

The Cleveland Cap Screw Company
2917 EAST 79TH STREET • CLEVELAND 4, OHIO
SPECIALISTS FOR 30 YEARS IN CAP AND SET SCREWS AND MILLED STUDS
Warehouses: Chicago and Philadelphia
Ask your Jobber for Cleveland Fasteners


Confidence-



WITH ITS SLEEVES ROLLED UP!

STRAIGHT AND STALWART, every factory stack is a towering symbol of man's faith in the future . . . industry's confidence in its ability to create and to expand production for better living and a richer world.

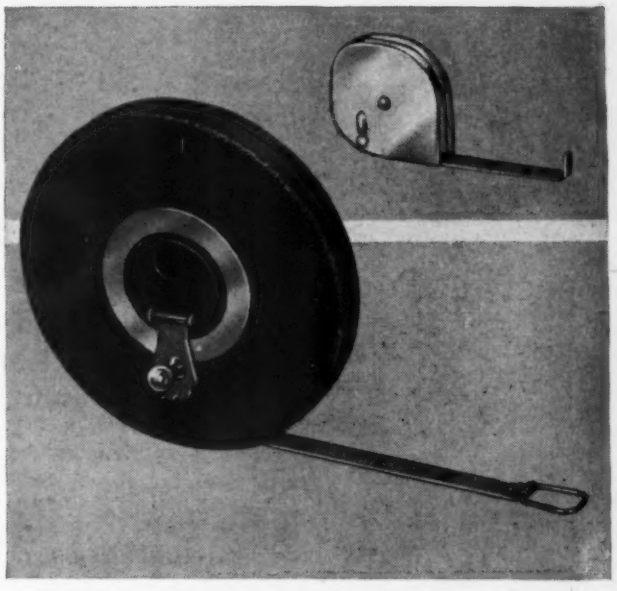
With confidence like that, Roebling has pioneered in developing and making an extraordinary range of products indispensable to industry. And the confidence that its products and engineering skill have earned in every industrial field is one of Roebling's most valued assets. Every Roebling employee is striving to safeguard that confidence by making products and rendering services that are of maximum utility to you.

MEASURE THIS FLAT WIRE BY ANY STANDARD

SIZE UP ROEBLING FLAT WIRE . . . its steel analysis, dimensional uniformity, temper, finish. You'll find it's *right* on every count . . . meets specifications and helps beat mounting production costs. You'll get fewer rejects with Roebling Flat Wire . . . every inch is uniform with every other inch.

Roebling looks out for you by controlling each step in the manufacture of its flat wire . . . makes its own steel to assure the right metal composition . . . produces wire by means of modern, highly specialized equipment and techniques . . . constantly applies the results of research and development to give you the finest flat wire that can be made.

Specify Roebling Flat Wire with confidence that it will meet your requirements uniformly and help you achieve smooth flowing, low-cost production. Your Roebling Field Man will be glad to help you determine the *right* wire for the job, and the right way of handling it. Simply write or call your nearest Roebling branch office.



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You Need MH* to SAVE TIME!

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WHY BUILD A NEW PLANT when you can modernize handling methods and cut production time and costs with Towmotor Mass Handling? Towmotor Fork Lift Trucks, Tractors and Accessories save time by speeding up handling operations, reduce costs by insuring more efficient use of production equipment, manpower and space.

FREE. Send for your copy of the "Towmotor Materials Handling Analysis Guide"—it shows you how to analyze and improve handling operations in your plant.

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MAGNUS 1-DX

A FASTER... BETTER GENERAL PURPOSE CLEANER FOR FOOD PLANTS

Wets and Penetrates
Oily Greasy Dirts
Emulsifies and Disperses
Deposits with
Minimum Hand Work

If you want greatly improved cleaning at materially lower costs, investigate Magnus 1-DX for

WRITE FOR THESE CLEANING MANUALS:
Bakery Cleaning Handbook
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- Bottle Washing
- Containers, Tanks, etc.
- Machinery & Equipment
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- Meat & Fish Equipment
- Dairy Equipment
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IN FOOD PROCESSING IT'S

Magnus
CLEANERS • EQUIPMENT • METHODS

VERTICAL MARKING RULE

"PULL PUSH" rule, No. 7506, has vertical markings said to make easy the taking of vertical or horizontal measurements. Nickel plated steel blade is 6′ long. Extra width of ⅝″ provides greater rigidity for long measurements. Blade can be completely removed from case for taking end to end measurements. Concave surfaces of nickel plated case assure solid two finger grip while blade is extended. *Stanley Electric Tools Div., New Britain, Conn.*

PRODUCTION LINE PAINT HEATER

TRIREX paint heater can heat paint to a high temperature just before it reaches the spray gun, reducing the viscosity and obtaining correct spraying temperatures, according to the manufacturer. The unit can be placed in the production line without creating severe complications of maintenance, it is claimed. Its heating capacity is 7 gallons per hour from 60 to 200 F. It uses a 1000 watt immersion heater, either 110 or 220 volts. *Bede Products, Inc., 3309 W. 118th St., Cleveland 11, O.*

BORING & FACING TOOLS

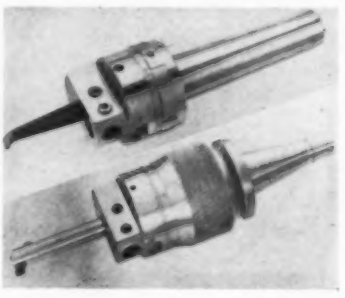
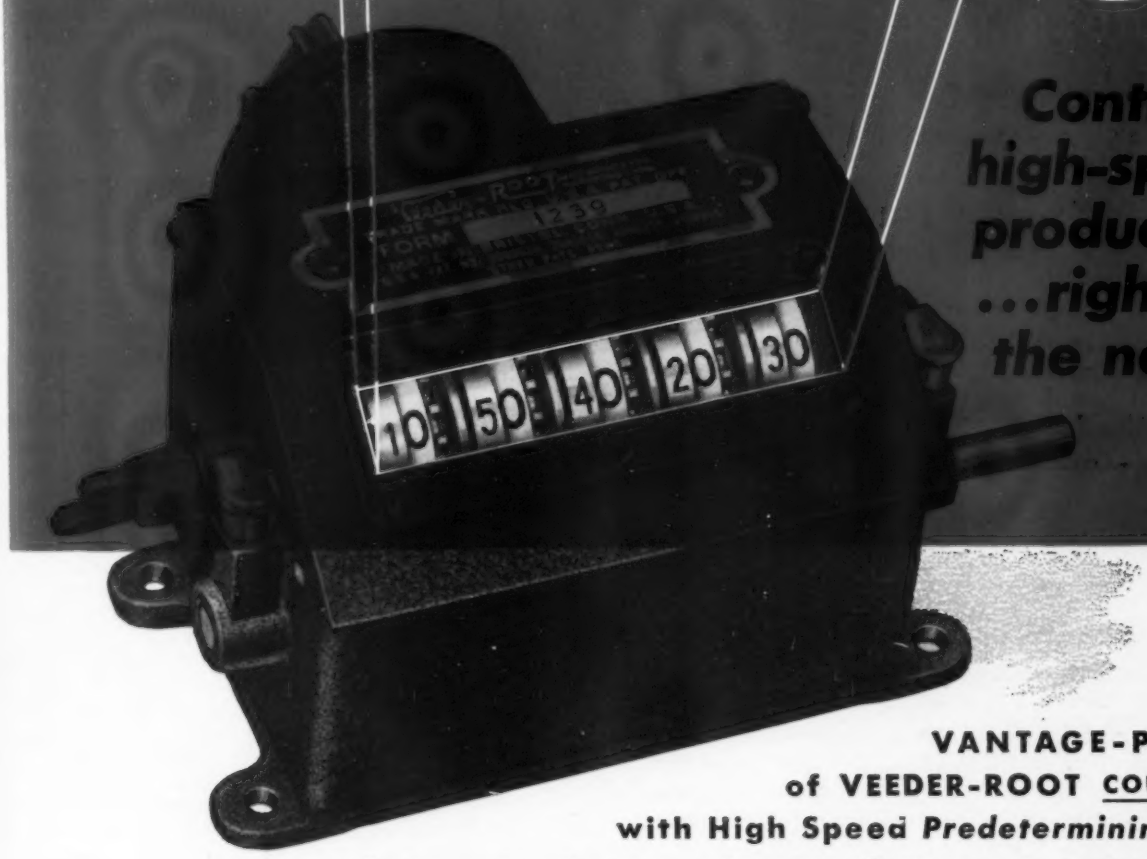


ILLUSTRATION shows Series No. 30 E-Z-Set boring head (top) and Series No. 40 power facing tool (bottom). Boring head features three-position location feature in each head for the boring bar; and well spaced micrometer type dials. It is available in models having maximum boring bar capacities of ½″, 1″, or 1½″. Tools cover boring range of from ⅜″ to 20″. Power facing tool has same boring capacities as series No. 30 tool plus the power facing feature which is made possible by an unusual gear arrangement for transmitting machine power to the facing tool at an exceptional ratio reduction. Additional information available. *The Maxwell Co., 500 Broadway, Bedford, O.*

(*Please turn to page* 156)

PREDETERMINED

Veeder-Readings



Control high-speed production ...right on the nose!

VANTAGE-POINTS of VEEDER-ROOT COUNTROL with High Speed *Predetermining* Counters

- Counter is easily pre-set to the proper number of strokes, turns, pieces, or other production units required. Just set the small, bright-metal wheels by hand.
- When run is completed and the counting wheels *read the same* as the pre-set wheels, counter signals the machine-operator or actuates a mechanism to stop the machine.
- No waste in surplus. And no cost-loss in setting job up again to make up for short run.
- Counter is easy to install and connect.

This High Speed Predetermining Counter is one of innumerable types of Veeder-Root Devices which "Count Everything on Earth." You can count on us to help *you* with any counting problem. Write.

Veeder-Root

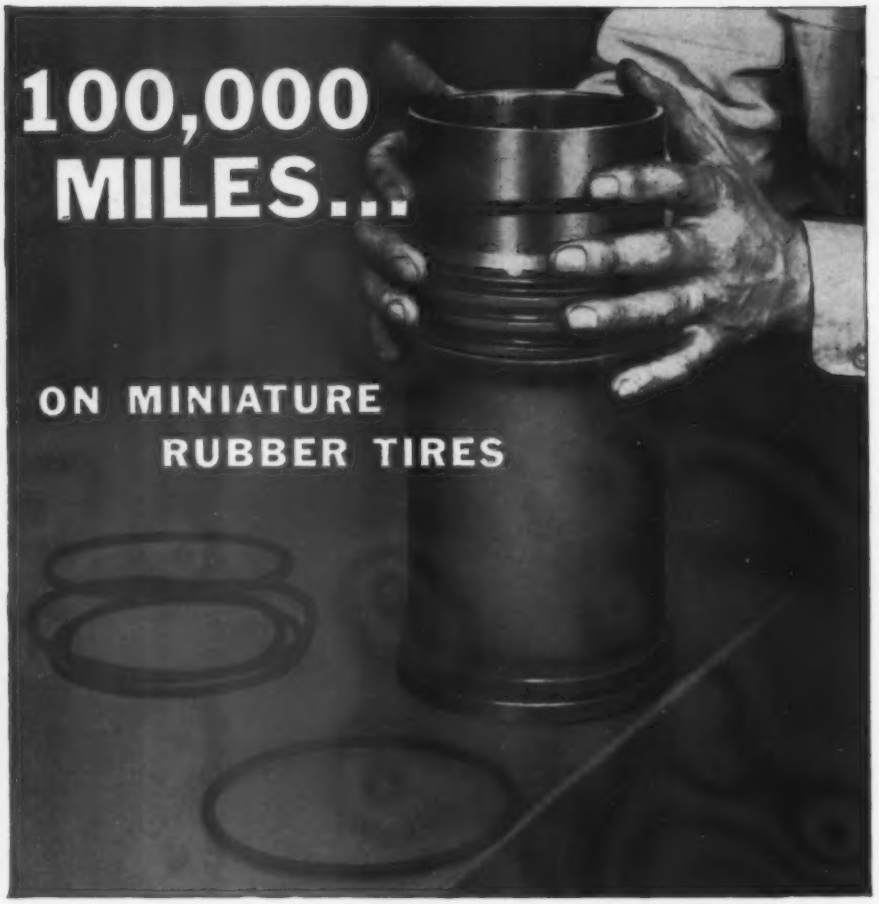
INCORPORATED

HARTFORD 2, CONN.

In Canada: Veeder-Root of Canada, Ltd., 955 St. James St., Montreal 3. *In England:* Veeder-Root Ltd., Dickinson Works, 20 Purley Way, Croydon, Surrey.

Counting Devices

ATTACH THEM TO YOUR PRESENT MACHINES . . . BUILD THEM INTO YOUR NEW MACHINES



Photograph courtesy of
Cummins Engine Company, Inc., Columbus, Indiana

The rubber packing rings for the cylinder liners used in Cummins Diesel Engines have an important function—far more important than their size indicates. They provide a seal between water under pressure at 180 degrees F. and oil at the high temperatures encountered in heavy duty engines. And these rubber tire-like rings must withstand these specified conditions for at least 100,000 miles of operation.

Resistance to sustained heat, controlled swell in oil, exceptional compression quality, exact tolerances—these were the diverse specifications required. Continental specialists produced a rubber ring that gives outstanding service in an outstanding diesel engine.

Your requirements for molded or extruded rubber also can best be served by specialists. Take advantage now of the assistance in rubber which Continental offers to design and production engineers.

• This little Booklet will help you.

3 MINUTES reading time will give you a new appreciation of the way in which rubber specialists can help you. Just ask your secretary to write for this factual booklet today.

Rubber by **CONTINENTAL**
RUBBER WORKS
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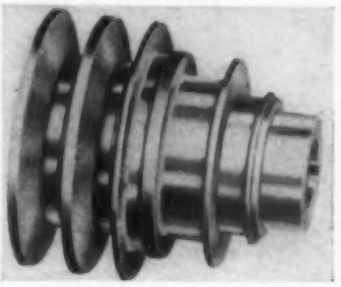
BRANCHES

Baltimore, Md.	Dayton, Ohio	Los Angeles, Calif.	Pittsburgh, Pa.
Boston, Mass.	Detroit, Mich.	Lutz, Fla.	Richmond, Va.
Buffalo, N. Y.	Hartford, Conn.	Memphis, Tenn.	Rochester, N. Y.
Chicago, Ill.	Indianapolis, Ind.	Milwaukee, Wis.	St. Louis, Mo.
Cincinnati, Ohio	Kansas City, Mo.	New York, N. Y.	San Francisco, Calif.
Cleveland, Ohio	Lancaster, S. C.	Philadelphia, Pa.	Syracuse, N. Y.

CONSTANT VOLUME PUMP

LOW-COST constant volume pump for 1000 psi service is described as suitable for materials handling equipment, industrial heating units, lift trucks and similar applications. The pump, Model 5W, is made in 8 different capacities from 3 to 10 gpm at 1200 rpm. Chief feature is the Rota-Roll pumping member design, with which the smaller roller or inner member is keyed to a shaft and drives the outer member at a speed 25% lower than the speed of the motor. This model is suitable for direct coupling drive only. *Sundstrand Machine Tool Co., Rockford, Ill.*

DRIVE AND CLUTCH UNIT FOR TWIN V-BELTS



SMOOTH starting on heavy loads, equalized belt pressure, and elimination of adjustments are claimed for this drive and clutch unit for twin V-belts. When the clutch is set for idling position, the belts ride on free-turning bearings of double slip-ring design. When clutch is engaged for driving position, the belts are gripped by and ride up on axially-moved pulley sidewalls. Shifting force is applied to the walls of the open-channel sleeve. Twin belt model rates at 5 to 10 hp. Pulley diameter is 3¾″; length 4⅛″; shaft size range 1″, 1⅛″, 1¼″. *V-Belt Clutch Co., 3757 Wilshire Blvd., Los Angeles 5, Calif.*

COMBUSTIBLE WASTE CAN

CONTAINER for storing oil rags and similar inflammable waste is available in both pedal and manually operated models, and in 7, 9, 12, and 15 gallon sizes. The can, called the Safe Guard, has a cylindrical body which extends all the way to the floor; a bottom which is recessed and soldered into the can; and a carrying handle riveted to the body of the can as well as to the lid. Heavy circular beading at top and bottom reinforces the can. *The General Detroit Corp., Detroit 7, Mich.*

(*Please turn to page* 162)

NEW ADDITIONS TO THE BROWN & SHARPE PERMANENT MAGNET CHUCKS

NOW...NEW SMALL SIZES—NEW FEATURES

These new models have all the advantages of other B & S Permanent Magnet Chucks . . . ready portability, absence of wires and auxiliary generators, freedom from heating with attendant distortion of work, strong holding power—retained indefinitely. All, suitable for wet and dry grinding. For sale only in the United States of America and its Territories. For complete information write: **Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.**

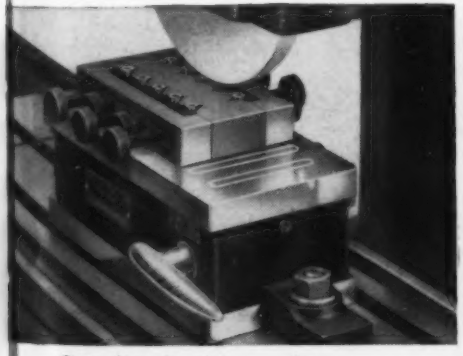
No. 408 Rectangular Model, with its small working surface (4" x 8"), is specially suited for use on small surface grinding machines, bench grinders and for bench work. Pole spacers are closer than on other rectangular models to permit holding smaller pieces.

No. 412 Two-Line Rectangular Model, has working surface, 4" x 12" and two line pole spacers. Useful for grinding rows of small parts as well as intermediate and large sizes. Many types of work may be laid end-to-end over line spacers. Packing strips not required.

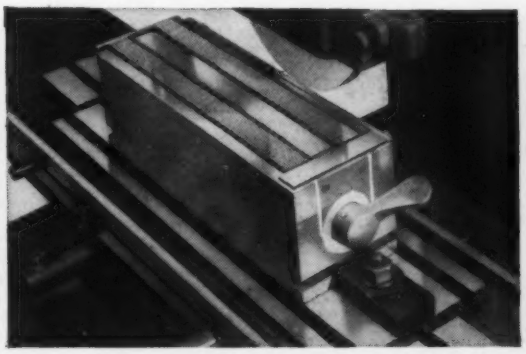
No. 5R Rotary Model, is the smallest B & S rotary model. Holds work from ¾" to 5" in diam. Control ring permits control of holding strength from any position in which chuck stops.

No. 7R Rotary Model, next smallest rotary model, holds work from 1 3/16" to 7" in diam. The amount of energy or holding power in the face can be controlled by giving the operating handle a part turn, thus permitting work to be moved or tapped into position and centered accurately.

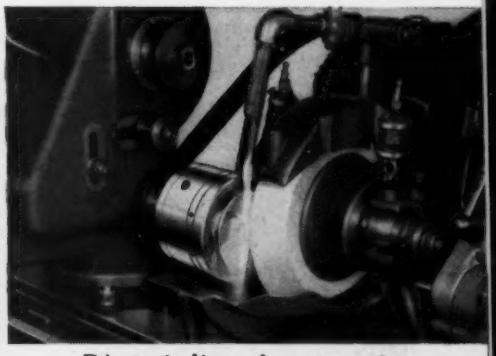
We urge buying through the distributor



Grinding bushing ends on No. 408 Chuck



Group grinding on No. 412 Chuck



Disc grinding of pump part on No. 5R Chuck

BROWN & SHARPE B·S

"They used to call me 'THE CREEP'..."

". . . but that was before the boss discovered there was a *difference* in tracing cloths. Ink just can't help creeping and feathering when you use a French curve, if the tracing cloth has a poor surface."

Arkwright gives you the kind of surface that practically assures razor-sharp lines. Oil, wax and soap-free mechanical processing assures uniform capillarity. Even the weaving and bleaching of special cloth is part of Arkwright's exhaustive system of standards, tests and inspections—to *prevent* pinholes, thick threads and the many other things that cause spoiled tracings, lost time.

Why not try Arkwright and see for yourself what a difference there is? Send for free working samples. Arkwright Finishing Company, Providence, R. I.

All Arkwright Tracing Cloths have these 6 important advantages

1 *Erasures re-ink without "feathering" or "creeping".*
2 *Prints are always sharp and clean*
3 *Tracings never discolor or become brittle*
4 *No surface oils, soaps or waxes to dry out*
5 *No pinholes or thick threads*
6 *Mechanical processing creates permanent transparency*

Arkwright
TRACING CLOTHS
AMERICA'S STANDARD FOR OVER 25 YEARS

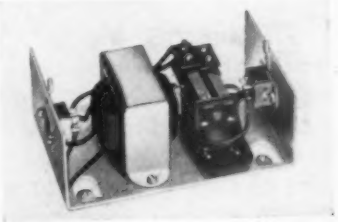
250-LB. CAPACITY HOIST

LIGHTWEIGHT hoist, known as the Zip-Lift, will handle loads up to 250 lbs. on and off machines, along assembly lines, in store rooms, etc., at a speed of 40 fpm. Features include: genuine wire rope; push-button control; crane-type limit switch, double brakes; transformer equipped where line volatage exceeds 110 volts. Bulletin H-20-3 available. *Harnischfeger Corp., 4577 W. National Ave., Milwaukee 14, Wis.*

TOOL ROOM MICRO-SCOPE

SAGEM tool room microscope is claimed to provide accurate and reliable means for control in the tool room, inspection department and metrological laboratory. It is described as being sufficiently rugged to take the normal abuse of tool room equipment, yet sensitive enough to do the same job in a super-precision laboratory. The unit consists of a movable work table and fixed optical system both mounted on a common base. Literature available. *E. Leitz, Inc., 304 Hudson St. at Spring St., New York 13, N. Y.*

LIQUID LEVEL CONTROL

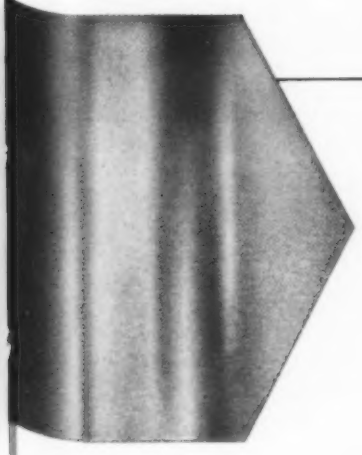


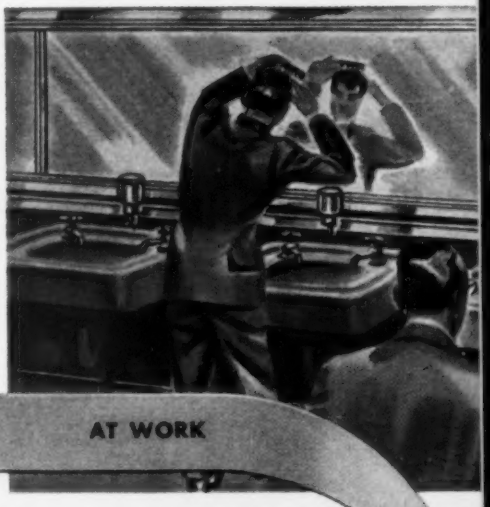
THIS liquid level control employs a long and a short electrode which are inserted through the top of the tank. When the liquid drops below level of the long electrode, the relay releases, closing the pump motor circuit. When the level rises to the short electrode, the relay closes, stopping the pump motor. A transformer is used to raise the voltage to 200 volts to reduce current required by the relay, and also to isolate the electrode circuits from the power line. *Guardian Electric Mfg. Co., Dept. LL, 1635 West Walnut St., Chicago 12, Ill.*

(*Please turn to page* 162)

Superior stainless strip steel

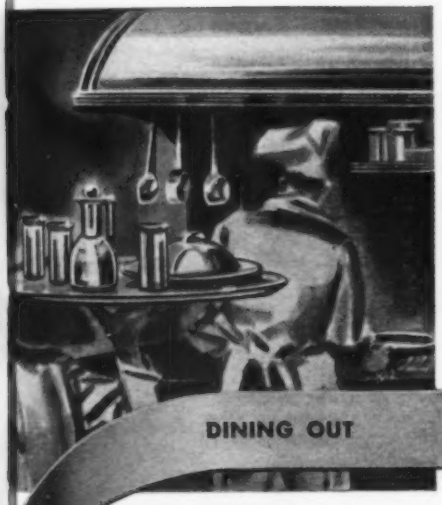
serves profitably at every turn!





HOME LIVING

AT WORK



DINING OUT

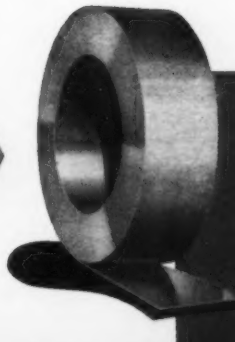
AT PLAY

SHOPPING

ENTERTAINMENT

Everywhere, day after day, modern Americans enjoy the beauty and usefulness of Stainless . . . the bright metal that *stays bright*, year after year.

There's profit in stainless products, and extra profit in fabrication when you use SUPERIOR Stainless Strip Steel! Uniform handling quality . . . achieved through special precision in manufacture . . . is one good reason why. *Let us detail the others.*

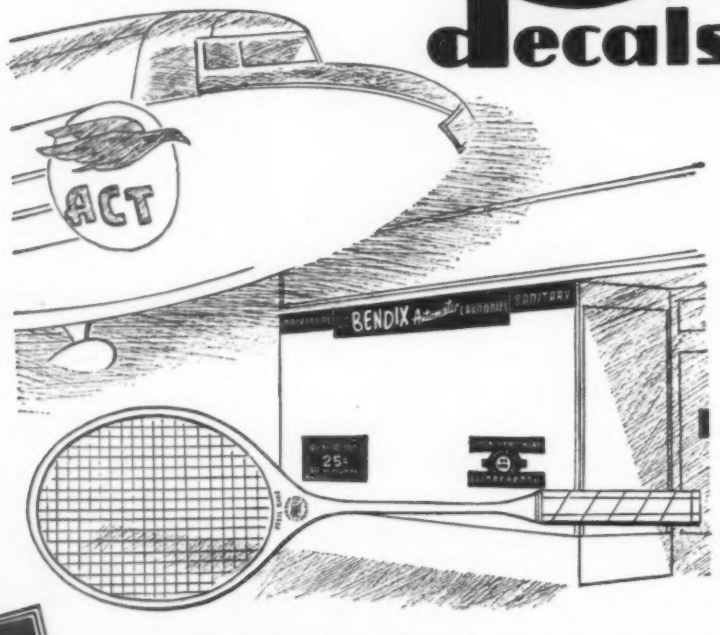


Superior Steel

CORPORATION

CARNEGIE, PENNSYLVANIA

pf decals *brand your product*



From radios to roller-skates—from a silver-winged airliner high in the stratosphere to a dainty bottle of perfume on a frilly dressing table—PF decals go everywhere, sell all the time. They're in your office and they ride through city streets on buses, trucks, trolleys, company autos. PF decals go where no ads ever reach — and they're selling throughout their long life, in free space! PF decals pay for themselves, bring credit and recognition to your product. Show your own trademark with pride; make full use of its value! If it's out-dated, PF has full art services and will show you new designs without charge or obligation.

Since 1856 PF decals have been an important part of over 50 industries. Learn how they can benefit your own product economically and profitably. Write for free samples and informative brochure. Address Dept. C, 220 W. 42nd St., New York 18, N. Y.

PALM, FECHTELER & CO.

NEW YORK • E. LIVERPOOL, OHIO • CHICAGO

Transmission Belting by Thermoid

The two grades of belting described here, cover the maximum range of industrial applications. Your Thermoid distributor will be glad to recommend the size and number of plies best suited to the particular service you have in mind.

For severe service, high speeds, small pulleys use Thermoid High Speed R*

Made of extra strong, hard, 35-ounce duck combined with top grade natural rubber friction and skim. This belt is extremely strong, flexible, and has a minimum amount of stretch. The square edges are protected by a sealing compound. All plies are straight-laid. Since there are no folds or seams, each ply carries its full share of the load. Supplied in cut or continuous length up to approximately 500 ft., or continuous wind endless, in all standard widths and any number of plies.

For regular service use Thermoid #400

A high-quality, brown-colored belt of finest 32-ounce fabric. This belt withstands severe flexing and shock loads. It is of folded-edge construction with a strong skim stock between the plies. Supplied in continuous lengths up to approximately 500 ft. in all standard widths and any number of plies. Also supplied endless with stitched diamond splice.

*Use Thermoid High Speed N (Neoprene) where oil or grease is present.

It's good business to do business with Thermoid

You will like the personalized attention you get from Thermoid distributors, and you will appreciate the speed with which a specific problem can be handled by our distributors in conjunction with our sales engineers. Thermoid concentrates on a well-integrated line of industrial rubber products and friction materials, and is unusually well equipped to service your requirements.

The Thermoid Line Includes: Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Custom Molded Products • Industrial Brake Linings and Friction Materials.

Thermoid

Thermoid Company · Trenton, N. J., U. S. A.

Automotive • Industrial • Oil Field • Textile Products

"Brake Shoe Research serves you today and anticipates tomorrow"

Wm. B. Given, Jr., President

When your CASTING PROBLEMS feature ABRASION think of . . .

Preparing specimens for X-raying

X-ray diffraction apparatus

CASTINGS BY BRAKE SHOE of ABK Metal

If abrasion resistance and wear resistance are the prime requirements in the castings you use . . . ABK Metal provides the answer. This is especially true since ABK Metal is backed by American Brake Shoe Company's vast practical knowledge of metals and foundry techniques.

ABK Metal castings are subjected to the production controls of chemical analysis, hardness and mechanical testing, each of which is important. But the important key to their serviceability is struc tural control accomplished by fundamental microscopic and X-ray diffraction techniques. Careful piloting in a full-sized experimental foundry is followed by periodic checking in the production foundry to insure sound castings free from injurious internal stresses.

We welcome inquiries on any phase of your need for castings whether of ABK Metal (wear resist), Gray Iron or Meehanite® as made by Brake Shoe.

6316

AMERICAN Brake Shoe COMPANY

BRAKE SHOE AND CASTINGS DIVISION

230 PARK AVENUE, NEW YORK 17, N. Y.

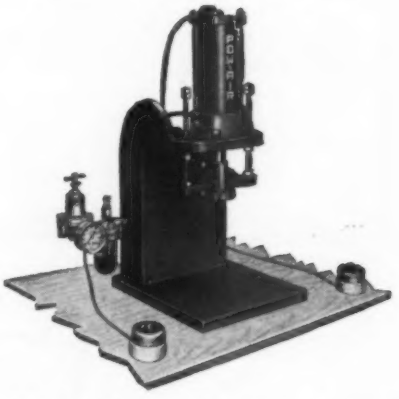
INSULATED PIPING

PIPE in units for overhead distribution of oil, viscous fluids, process liquids and steam is insulated at the factory to meet individual project specifications. Units are shipped in 21 foot sections, completely prefabricated and ready for installation with only one handling required at job site. In prefabrication, asbestos, cork or other insulation is machine coated with high temperature asphalt and tension wrapped with asphalt-saturated asbestos felt. A second coating of asphalt is followed by a tension wrapping of aluminum or copper foil. The unit is waterproof and weather protected. *The Ric-wiL Co., Dept. 7682B, Union Commerce Bldg., Cleveland, O.*

PREPARING METAL FOR PAINTING

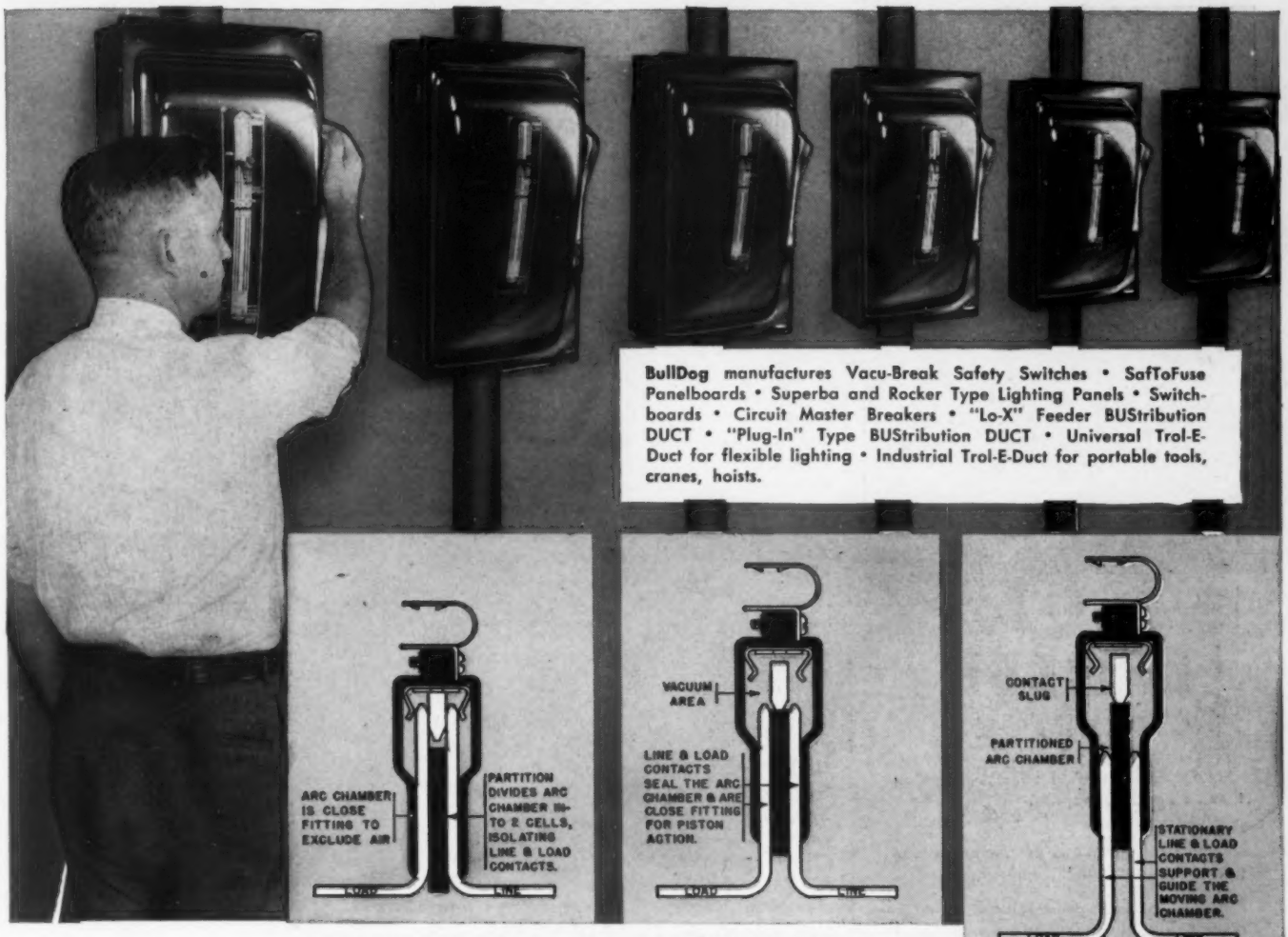
IRON, steel, aluminum and other metals (except zinc and cadmium) are said to be effectively prepared for painting by treatment with Deoxidine, a phosphoric acid metal cleaner and rust remover. Supplied as a concentrate it is generally diluted with 3 parts of water for application. The cleaner removes oil, grease and rust and neutralizes invisible rust-producing agents. It creates a minutely etched surface that is claimed to hold paint with a firm grip. *American Chemical Paint Co., Ambler, Pa.*

PORTABLE PNEUMATIC PRESS



POW-AIR portable pneumatic press is for releasing large presses on light forming, stamping, punching, riveting, etc. Capacity is adjustable up to 1500 lbs. It has a speed up to 60 strokes per minute at maximum air pressure of 125 lbs. Uses all or any part of 6" stroke, with constant pressure throughout. The die space is 9" x 12" with 9" open height. Press has four-way solenoid air valve with dual safety hand switches. Pedal switches and other controls available. Measures 25" high x 12" wide x 16" deep. *James Industries, Inc., 325 Municipal Bldg., Skaneatles, N. Y.*

(*Please turn to page* 164)

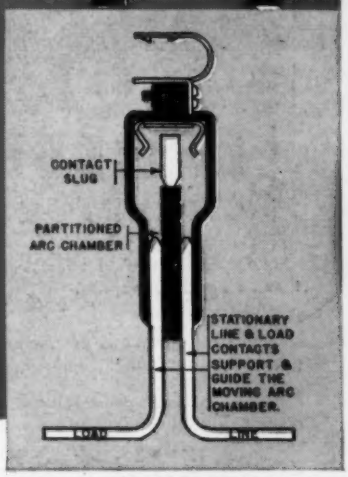


BullDog manufactures Vacu-Break Safety Switches • SafToFuse Panelboards • Superba and Rocker Type Lighting Panels • Switchboards • Circuit Master Breakers • "Lo-X" Feeder BUStribution DUCT • "Plug-In" Type BUStribution DUCT • Universal Trol-E-Duct for flexible lighting • Industrial Trol-E-Duct for portable tools, cranes, hoists.

ARC CHAMBER IS CLOSE FITTING TO EXCLUDE AIR
PARTITION DIVIDES ARC CHAMBER IN-TO 2 CELLS, ISOLATING LINE & LOAD CONTACTS.
LOAD
LINE

IN FULL "ON" POSITION, the partitioned bakelite arcing chamber carries the free-floating contact slug in perfect alignment. The "Clampmatic" pressure spring assures contacts tight as a bolted connection.

RUPTURING THE CIRCUIT, the quick outward movement of the housing reduces the amount of air in the arcing chamber. Magnetic blow-out force throws the arc against the chamber walls for final dissipation.



IN FULL "OFF" POSITION, the stationary contacts remain partially inserted in the arcing chamber, sealing them against dust and dirt.

Safety switches with built-in "watchdogs"

EACH BullDog Vacu-Break Safety Switch has an automatic guardian which springs to action whenever a dangerous arc threatens.

Vacu-Break means real safety

With BullDog Vacu-Break Safety Switches, arcing cannot get out of control. When contact is broken, the limited air supply automatically snuffs out the arc in an instant. The special, exclusive construction of the arcing chamber all but eliminates arcs entirely. And the CLAMPMATIC feature assures contacts tight as a bolted connection for cool operation.

Long-lived, too

BullDog's Vacu-Break feature means greater efficiency and longer useful life, too. Burning and pitting of contact points are greatly reduced. Current flows smoothly through the silvered copper conductors.

All ways, Vacu-Break Safety Switches are better. Safer . . . dangerous arcs are curbed. More efficient . . . power flows smoothly. Longer lasting . . . wear due to burning and pitting is drastically reduced.

BullDog's Field Engineers welcome the chance to sit in on the planning stages of a building project. Their knowledge of electrical distribution layout can mean savings in installation and maintenance costs, as well as highest efficiency and reliability in actual operation. Why not take advantage of this pre-building service?

BULLDOG ELECTRIC PRODUCTS COMPANY

DETROIT 32, MICHIGAN • FIELD OFFICES IN ALL PRINCIPAL CITIES

IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO

BULLDOG

HEADQUARTERS FOR ELECTRICAL DISTRIBUTION

CUT YOUR COSTS up to 30%

Lamson Conveyors in Action
Westinghouse Electric Corp.
Sunbury, Pa.

LAMSON CONVEYORS

SAVE wasted effort . . . handling time . . . and floor space.

SPEED flow of materials for greater production.

- It's a fact. Materials-handling costs actually eat up to 30% of your manufacturing dollar. *And — there's nothing to show for it in your finished product.*
- That — for management — is a tough headache.
- *But this is also an incontrovertible fact.* Lamson Conveyors have drastically cut materials-handling costs in thousands of plants. (The Westinghouse Plant above is only one.) They can do the same for you.

For Greater Savings—
LAMSON Pneumatic Tubes

- Coordinate flow of papers with the flow of materials on Lamson Conveyors. Save costly messenger service . . . speed flow of mail, telegrams, requisitions, small tools, samples, and blueprints.

In One Plant Alone
LAMSON TUBES Saved
$150,000 in one year

The ALLEN-BILLMYRE DIVISION of Lamson Corporation supplies single and multistage blowers and exhausters for all industrial uses. ½ to 200 HP; ¼ to 8 lbs. Pressure, 25 to 15,000 C.F.M.

MAIL THIS COUPON TODAY!

FREE BOOKLET

LAMSON CORPORATION
300 Lamson Street, Syracuse, New York
Please send me further free information on:

☐ Conveyors ☐ PneumaticTubes
☐ Blowers and Exhausters

Company.....
Address.....
City..... Zone .... State.....
My name.....

PROTECTIVE PIPE COATING

DURATEX protective pipe coating is said to have exceptional resistance to electolysis and corrosion, and to reduce damage to pipe coating compound due to shock impact caused by falling stones, etc., when the line is back-filled. Other features claimed are: great ductility, high flash and fire point (in excess of 500 F), non-toxic, easy to apply, high bonding characteristic to metal or concrete. *National Petroleum Sales, Inc., 315 W. 9th St., Los Angeles, Calif.*

GRINDING COOLANT FOR ALL METALS

SILVER Chip No. 2 universal grinding coolant is said to handle requirements where grinding coolants satisfactory for steel operations are not wholly satisfactory for copper, aluminum and brass. Manufacturer's claims for use of coolant include: cleaner grinding wheels and machines; the use of finer grit and harder grades of wheels without "burning"; rust elimination; reduced wheel dressing; rapid chip settling, etc. Literature available. *Machinery Lubricants, Inc., 31 St. James Ave., Boston 16, Mass.*

SQUIRREL CAGE MOTOR

SINGLE-phase Life-Line capacitor-start, induction run, squirrel cage motor is available in ratings of ¾, 1, 1½, 2, 3, 5, and 7½ hp (frames 203 through 324). The motor is of all-steel construction. The capacitor is used for starting only. Starting switch or relay disconnects capacitor as the motor approaches full speed and it operates as induction run motor. Air openings are in the lower half om the end brackets for protection against dripping liquids. Self-sealed, prelubricated ball bearings provide lubrication for 5 years or longer without repacking. Further information available. *Westinghouse Electric Corp., Box 868, Pittsburgh 30, Pa.*

(*Please turn to page* 168)

For DEPENDABLE SPRINGS
small stampings — wire forms

ILLINOIS COIL SPRING COMPANY

ALL TYPES
ALL SIZES
ALL MATERIALS

For PROMPT SERVICE

ILLINOIS COIL SPRING COMPANY

LARGE ORDERS OR SMALL

For REASONABLE PRICES

ILLINOIS COIL SPRING COMPANY

ON THE QUALITY YOU REQUIRE

- This is an ideal source of supply—large enough, experienced enough and well equipped to handle promptly any requirement for mechanical springs—small enough to *want* to do a good job for you. Your inquiries invited.

Write, Wire or Phone . . NOW!

Illinois Coil Spring Co.
2100 N. Major Avenue
Chicago 39, Illinois

Precision-Made by the World's Greatest Toolmakers

Designed for better, faster cutting on horizontal band saw machines such as Wells, Johnson, Kalamazoo, etc., and on all vertical cut-off machines.

Precision-made by STARRETT for longer blade life, more accurate cutting at closer tolerances. Eliminates stripping of teeth.

STARRETT *Wavy Set* Band Saws have proved so satisfactory in service that the following sizes have been added to the standard list: ½", ten and fourteen teeth; ⅝", ten and fourteen teeth; ¾", ten, twelve and fourteen teeth; 1", ten teeth.

AVAILABLE FOR IMMEDIATE SHIPMENT

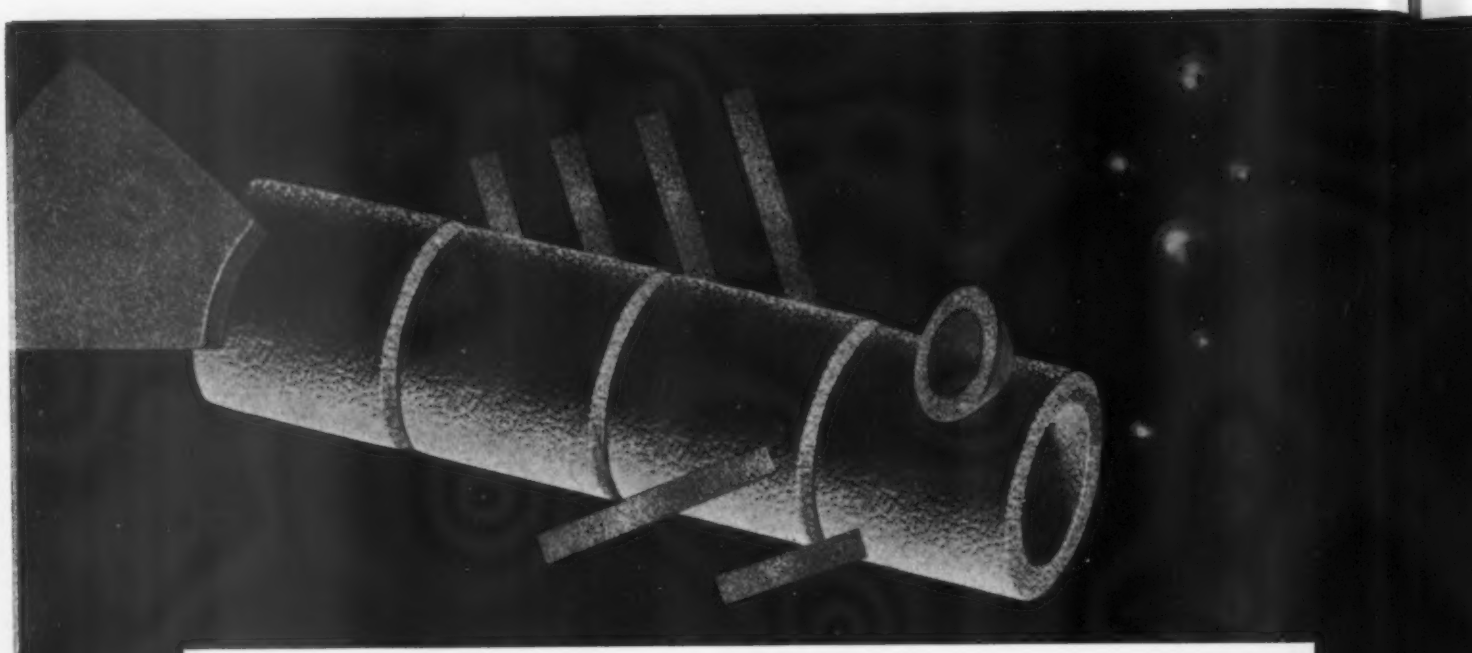
Order Starrett Wavy Set Band Saws today through your Mill Supply Distributor

STARRETT

PRECISION TOOLS • DIAL INDICATORS
STEEL TAPES • GROUND FLAT STOCK
HACKSAWS • BAND SAWS FOR CUTTING
METAL, WOOD, PLASTICS

Buy Through Your Distributor

THE L. S. STARRETT CO. · *World's Greatest Toolmakers* · **ATHOL, MASSACHUSETTS, U.S.A.**



Want to reel in lower grinding costs?

Are you fishing for ways to cut overhead or improve production in your grinding department?

Are wheel wear, dressing time and expense, wheel loading or slow stock removal eating into your profits?

Then Peninsular engineers can help you. Let them give your grinding a complete check up, *at no cost to you.*

They'll make a thorough study of your machines, your grinding methods, the materials you grind. Only after this exhaustive analysis has been made will they make their suggestions and recommendations.

This Peninsular on-the-grounds analysis is the chief reason Peninsular *custom-made* wheels have helped bring in savings for manufacturers in almost every industry during the last sixty years.

May we have one of our engineers call on you?

The Peninsular Grinding Wheel Co., 729 Meldrum Ave., Detroit 7. *Sales Offices:* Chicago, Philadelphia, Buffalo, Cleveland, Pittsburgh, Houston, St. Louis, Cincinnati.

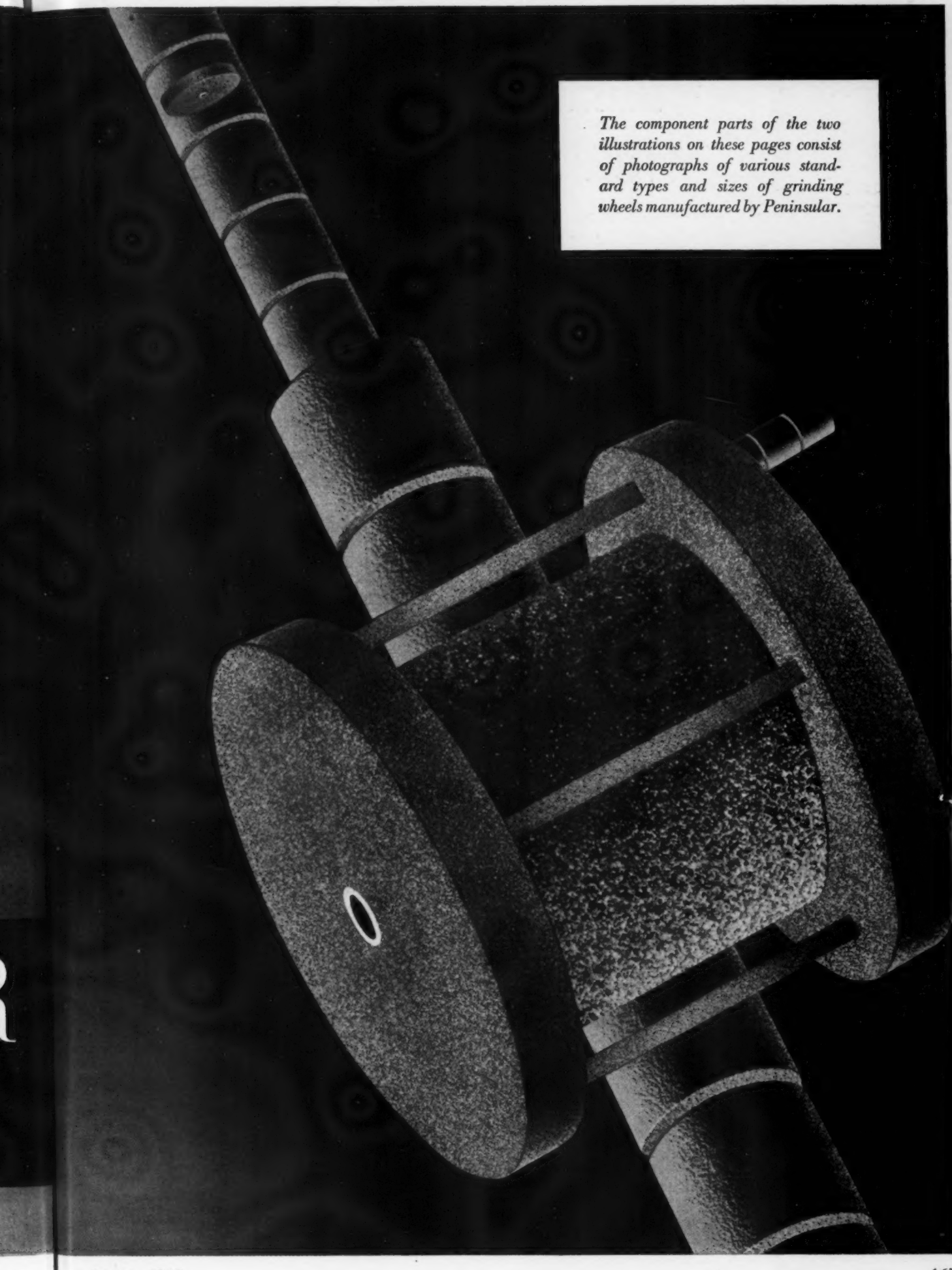
PENINSULAR

INDIVIDUALLY PENINSULAR ENGINEERED

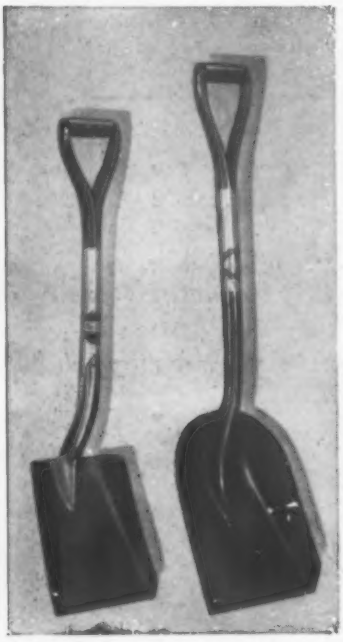
GRINDING WHEELS

SINCE 1889

SPECIALISTS IN RESINOID BONDED WHEELS



The component parts of the two illustrations on these pages consist of photographs of various standard types and sizes of grinding wheels manufactured by Peninsular.



All Blade Finishes now Black except Molders' Shovels which may be furnished with either face or back polished.

These Blade Edges WON'T SPLIT

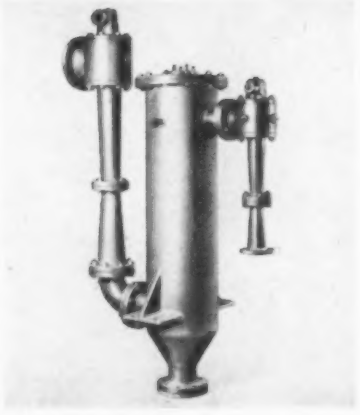
We guarantee this if you make sure to specify . . .

INGERSOLL *Shovels*

The special Tillage Steel, known as TEM-CROSS, used in the manufacture of all Ingersoll Shovels, was developed in our own steel mills. By cross-rolling and special heat-treating, we give this steel an interlocking, mesh-grain structure that resists splitting.

INGERSOLL STEEL DIVISION
Borg-Warner Corporation
NEW CASTLE, INDIANA
Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

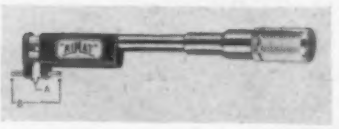
QUICK SHIPMENT OF STEAM JET EJECTORS



If you are after reliable and efficient performance ...and require almost immediate shipment...send your inquiry to Graham...25 years of steam jet ejector engineering is built into each Graham unit.

GRAHAM MANUFACTURING CO., INC.
415 LEXINGTON AVE. • NEW YORK 17, N. Y.

LONGITUDINAL MICROMETER

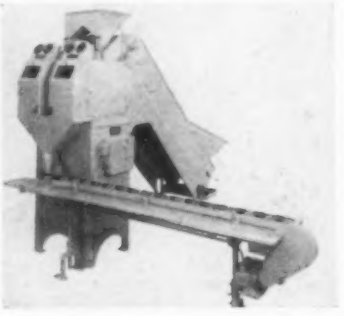


MODEL "L" longitudinal duplex micrometer is designed for both inside and outside measurements of grooves and flanges on the inside of a bore. Can reach into a hole or opening down to ½". Measurements are readable while the instrument is held in place. External measurements are made between points "A" on the above photograph, and internal measurements are made between points "B". *Richards Machine Tool Co., 124 S. Isabel St., Glendale 5, Calif.*

TRANSPARENT FLEXIBLE PROTECTIVE COATING

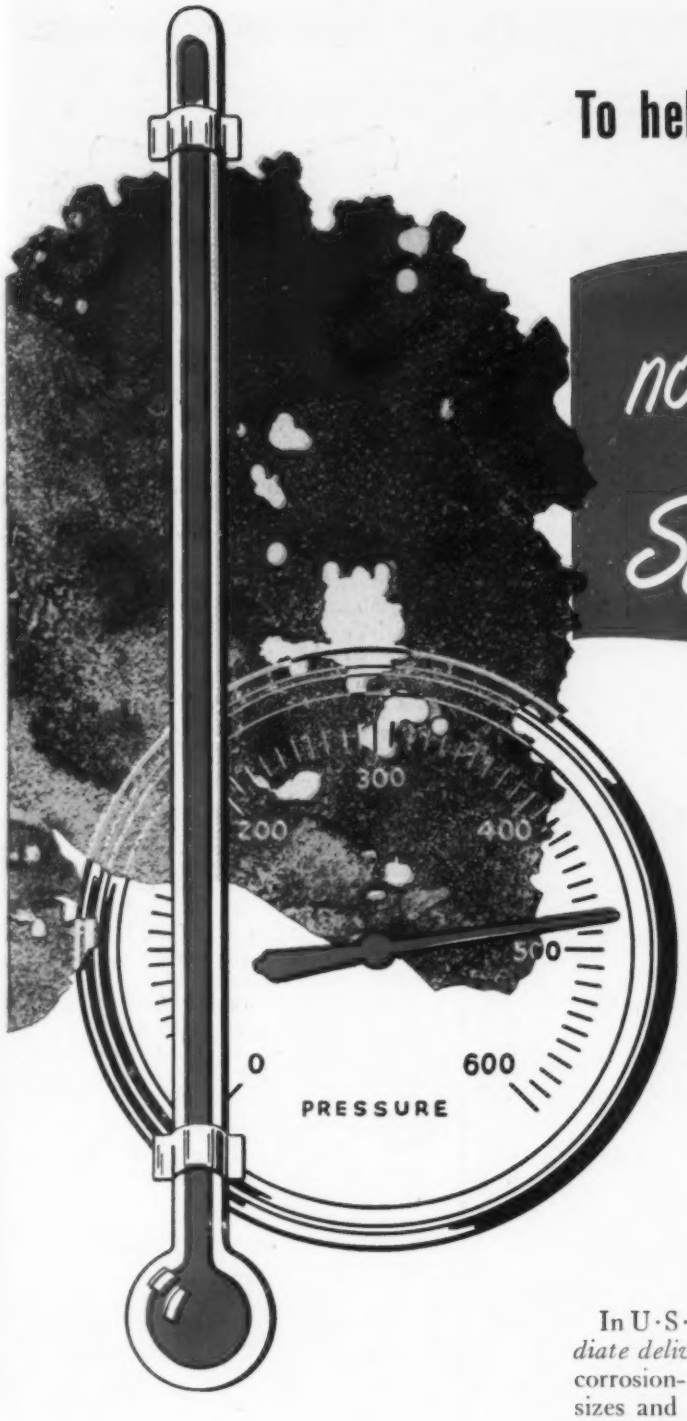
PERMACOTE is a coating for use on metal, wood leather and fabric surfaces that is said to offer protection from moisture, acids, alkalies, alcohol, dyes, dirt, dust, etc. It is claimed to impart a lustre to any surface and to effectively seal in and prolong the life of ordinary paints, lacquers and varnishes. It remains permanently flexible, is resistant to extremes of heat or cold and will not crack or chip in spite of the expansion or contraction of the surface it protects. *State Chemical Corp., 1265 Broadway, New York 1, N. Y.*

METAL SPECIALTIES PACKAGING MACHINE



HIGH speed "Elec-Tri-Pak" weigher is supplied with a low, waist-high rear hopper from which material is drawn by specially metal cleated conveyor feed belts. The belts intermittently place material on vibratory feed trays, which dispense the material into power rotated weigh-by buckets. Tray can be made with dribble feed section to continue increment adjusting to bring up desired load to within close tolerance. Bucket dispenses its load through a discharge spout. The unit is said to be suitable for filling 50, 100 and 1000 pieces of metal specialties in any type container where the weight per discharge does not exceed approximately 3 lbs. *Triangle Packaging Machinery Co., 906 No. Spaulding Ave., Chicago 51, Ill.*

(*Please turn to page* 170)



To help you avoid losses and delays caused by corrosion . . .

nothing equals Stainless Steel

TODAY when the emphasis is on production—when it is so important to get the most out of plant facilities—when you are faced with the imperative need for reducing time-consuming breakdowns and work stoppages—don't overlook the proved superiority of Stainless Steel in overcoming corrosion troubles.

Not only does Stainless Steel insure resistance to more types of corrosives than any other commercial metal, but when it comes to critical applications involving high temperatures — where resistance to oxidation and retention of strength are imperative—it is in a class apart.

In addition, Stainless wherever used adds toughness and wear resistance. Makes cleaning easy. Protects product purity. Cuts maintenance to the bone. And, what is equally important—*it is available, right now!*

In U·S·S Stainless Steel we can offer you—*for almost immediate delivery*—a complete family of perfected, service-tested, corrosion- and heat-resisting steels in a wide variety of forms, sizes and analyses. These steels allow the widest latitude in design and permit the employment of the most advanced manufacturing techniques.

So, plan to use them to improve your product or equipment. Our engineers who are specialists in the use of Stainless will gladly show you how to obtain optimum results at minimum cost.

U·S·S STAINLESS STEEL

USS STAINLESS STEEL — UNITED STATES STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

UNITED STATES STEEL AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY, Warehouse Distributors—Coast to coast: UNITED STATES STEEL EXPORT COMPANY, New York

"KEX" Industrial Wiping TOWELS

General View of Diesel Engine Test Shop, Baldwin Locomotive Works, Philadelphia, Pa.

...More Important Every Day to the *AMERICAN INDUSTRIAL SCENE*

This great Diesel Engine plant is one of many of America's vital industries where KEX Industrial Wiping Towels contribute to greater efficiency of operation.

The reason why KEX Industrial Wiping Towels have won for themselves such an important role is because they have been produced *for wiping only.* They have no harsh seams... no hidden buttons... no abrasive particles to mar delicate and expensive surfaces.

They come in neat, easily stored bundles that help control distribution—*every wiping towel* in the lot is *thoroughly cleaned and inspected before delivery to you.*

Take your cue from industrial leaders who make it their business to keep operating costs down—and efficiency up.

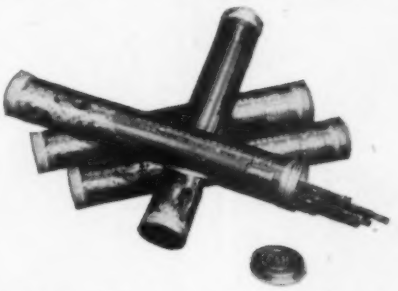
Nothing to Buy—No Expensive Inventory—Just a Low Monthly Rental. The first month should show a decided saving on wiping costs.

For complete information, see your classified Telephone Directory for nearest KEX distributor, or write KEX NATIONAL SERVICE, 295 Fifth Avenue, New York 16, N. Y.

"KEX" NATIONAL SERVICE

REG. U.S. PAT. OFF.

HARD-SURFACING ELECTRODES



"HARTOP" hard-surfacing electrodes, brown, green, red and yellow, cover the Rockwell C range of from 35 to 63 (as deposited). Brown is for welds subject to angular shock and abrasion. Green is designed for high resistance to impact and abrasion, and is said to provide strong bonds on carbon and alloy steels, manganese steels and cast iron. Red is for severe impact and abrasion. Deposits of Yellow resist abrasion and deformation caused by weight and impact. Each type is available in 5 lb. moisture proof tubes with air-tight, screw-on tops. *Harnischfeger Corp., Welding Division, 4577 W. National Ave., Milwaukee 14, Wis.*

CORROSION-RESISTANT FINISH OR BOND

"FINISH No. 146" can be used as a clear corrosion-resistant finish on steel or as a bond for subsequent application of paints, lacquers and enamels over steel, aluminum, zinc base alloys, copper alloys and magnesium. It can be air dried or baked. Used as coating it is applied by dipping, spraying or brushing. Used as bond or undercoat it can be applied by dipping or spraying Aluminum panels with sample applications available. *The Mitchell-Bradford Chemical Co., 2446 Main St., Stratford, P.O., Bridgeport, Conn.*

STICKERS AND LABELS

ILLUSTRATION shows one of the uses of Mail Aid labels, companion number to Duplisticker label for labeling the tabs of file folders, for imprints on bulky books or pamphlets, for addressing oversize envelopes, for filing record cards in duplicate, addressing return reply envelopes, etc., where duplicate addressing is needed. The Mail Aids (white only) come in two sizes, 2 13/16" x 1", 33 to the sheet, and 2 13/16" x 1⅜", 24 to the sheet. The size of the Duplisticker is 2 13/16" x 1", 33 to the sheet. It is available in white, blue, green, pink and canary. *Eureka Specialty Printing Co., Scranton 9, Pa.*

(*Please turn to page* 172)

How to get prompt delivery on sheet metal products:

YOU . . . FURNISH THE STEEL

If you can supply us with 12 to 24 gauge sheet steel, we will buy the steel from you and ship pound for pound . . .

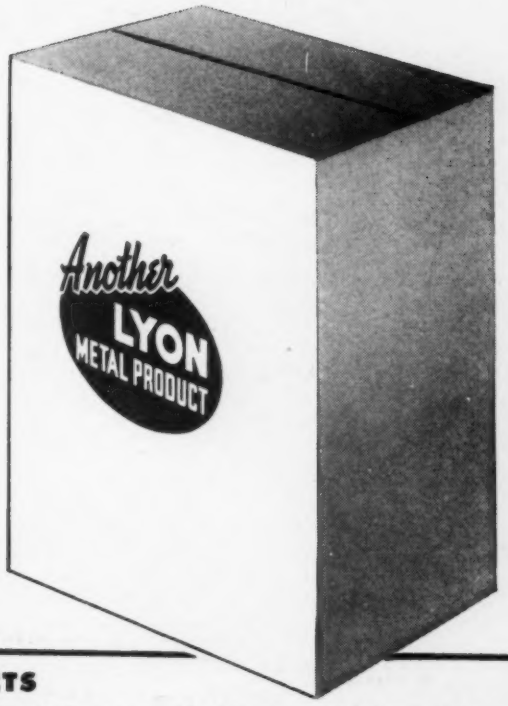
EITHER

. . . LYON standard products—any selection of items in production (see partial list below)—at regular published prices . . .

OR

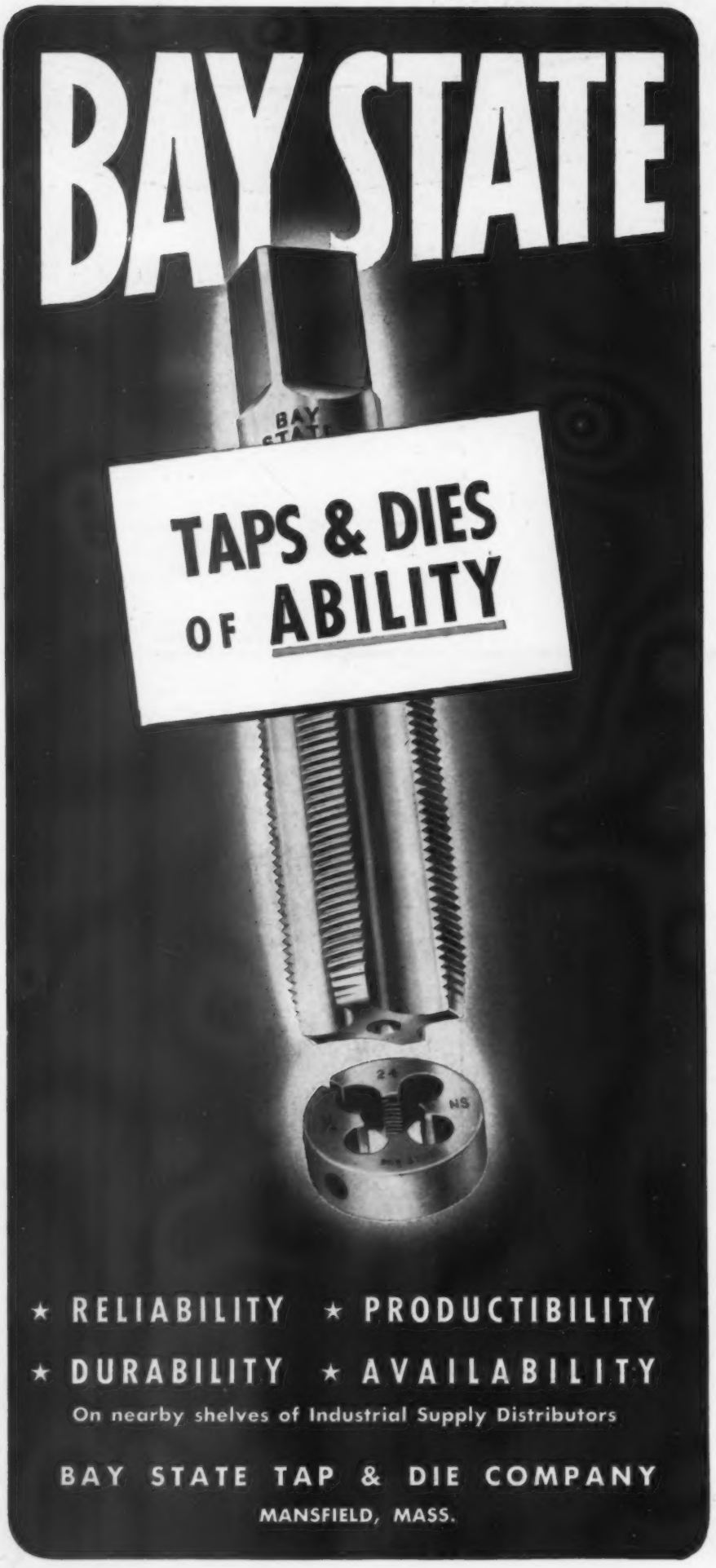
. . . your own assemblies, subassemblies, parts, etc., for your product—to your specifications—in an even wider range of gauges—8 to 30.

LYON . . . WILL MAKE THE PRODUCT

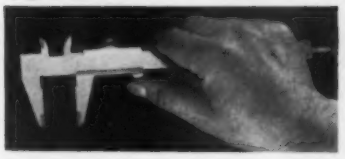


A PARTIAL LIST OF LYON PRODUCTS

- Shelving
- Lockers
- Wood Working Benches
- Economy Locker Racks
- Kitchen Cabinets
- Display Equipment
- Hanging Cabinets
- Welding Benches
- Filing Cabinets
- Cabinet Benches
- Folding Chairs
- Drawing Tables
- Storage Cabinets
- Bench Drawers
- Work Benches
- Drawer Units
- Conveyors
- Shop Boxes
- Bar Racks
- Bin Units
- Tool Stands
- Service Carts
- Hopper Bins
- Parts Cases
- Flat Drawer Files
- Tool Trays
- Desks
- Stools
- Tool Boxes
- Sorting Files
- Ironing Tables



RUSTLESS VERNIER CALIPER

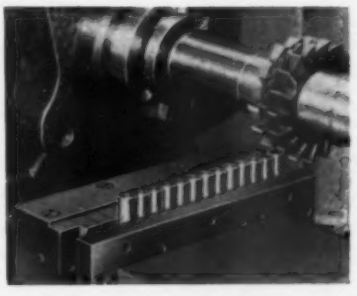


THIS rustless chrome vernier caliper enables the mechanic and toolmaker to measure from 6" in 1/1000" and 1/64" for outside, inside and depth dimensions. The tool has knife edges for measuring the root diameter of threads, and points for accurate dividing. All parts are manufactured to close tolerances resulting in smooth sliding action when the vernier is moved along the scale, maker claims. Model graduated in both English and metric systems also available. *George Scherr Co., 200 Lafayette St., New York 12, N. Y.*

DUAL BEARING STOCK PUSHER

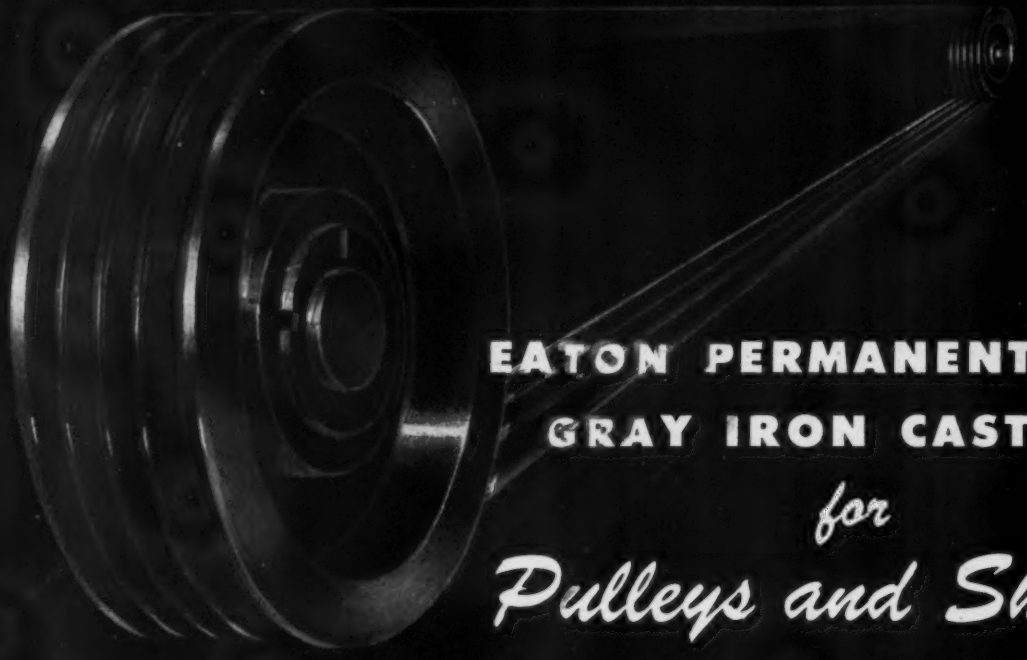
THIS stock pusher is easily adjusted and will also feed to the very end of the stock, according to the manufacturer. Known as the "Economy" it has a dual bearing, one in the mid-section and one in the nose, which is said to provide 50 to 100% more bearing length with a corresponding lighter spring tension requirement in each bearing to accomplish positive feed. Furnished for any stock size, ¼" and upward, for any machine. *Sheffer Collet Co., Traverse City, Mich.*

EQUALIZING GANG VISE

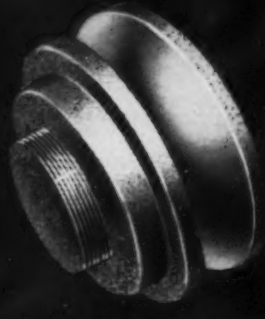


DERY gang vise, which allows the machining of from two pieces to the capacity of the vise, consists of a solid jaw and a body which holds a series of equalizing pads or blades. The solid jaw is locked to the body with screws and the work inserted. The "V" grooves and the equalizing pad form a three point chuck for each piece of work. Pieces with a diameter variance can be milled simultaneously, since the blades will equalize, or give, allowing each piece to be held firmly. Literature available. *Dery Tool and Die Co., Pine Meadow, Conn.*

(*Please turn to page* 174)



EATON PERMANENT MOLD GRAY IRON CASTINGS *for* *Pulleys and Sheaves*



Uniform structure throughout the casting, freedom from growth and segregation, plus good tensile strength and ability to take a high surface finish—these qualities make Eaton Permanent Mold Gray Iron Castings ideal for the production of V-belt pulleys, sheaves, and similar parts. Free machinability makes for maximum production speed and low machining cost.

Eaton Foundry Division engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product. Send for your copy of the illustrated booklet, "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings".

EATON
MANUFACTURING COMPANY
FOUNDRY DIVISION
9771 French Road · Detroit 13, Michigan

MATERIAL HANDLING News

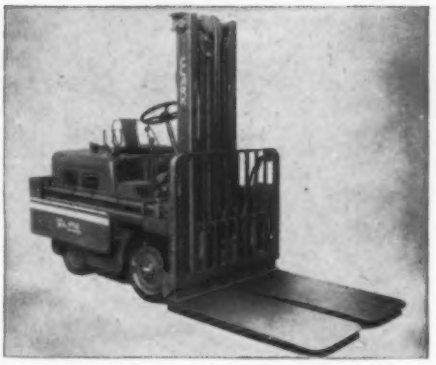
SOLVED! — that familiar problem of transferring a load of material from a pallet to a common carrier at minimum cost — *as a unit instead of one piece at a time* . . . Clark's PUSHER Device attachment for Clark fork trucks *removes the load, retains the pallet.*

Alert management in many businesses, and yours may be one, has long sought for a quick, low-cost machine-power way to transfer material from pallets to common carriers when the pallets are not to be shipped. That problem has been permanently solved by the Clark Pusher Device.

REMOVE LOAD — RETAIN PALLET

A Clark fork truck equipped with this efficient attachment will perform all the normal functions of a fork truck—lifting loads, carrying them and tiering them; and in addition it unloads a unit load from the pallet *as a unit*, short-cutting the laborious piece-by-piece removal.

You'll undoubtedly think of many other ways to apply the Clark PUSHER's basic usefulness; and every new use to which you can put it means money in the pocket.



PUSH + PULL = Pul-Pac

Many features of the Clark PUSHER device were born of the exhaustive development work which created the Clark "Pul-Pac," sensation of both National Materials Handling Expositions. The "Pul-Pac" handles unit loads assembled on load-base sheets of corrugated paper, fiber board or similar material, disposable or durable, instead of on conventional pallets. Its rack has a clamping device which grips the projecting edge of the load-base sheet; and retraction of the rack draws the entire load onto the truck's carrying plates. At the load's destination the pusher removes it, base-sheet and all.

FOR LOWER-COST HANDLING

Both these revolutionary advancements are today saving big sums for businesses in many fields. Let Clark help you discover rich opportunities for savings in your own operations. You'll benefit your business when you CONSULT CLARK.

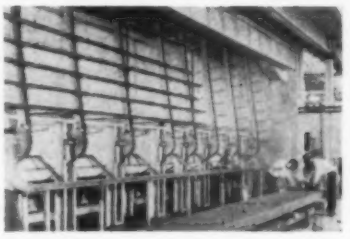
CLARK ELECTRIC AND GAS POWERED **FORK TRUCKS**
AND INDUSTRIAL TOWING TRACTORS

CLARK EQUIPMENT COMPANY, TRUCTRACTOR DIVISION, BATTLE CREEK 23, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

DRILL JIG

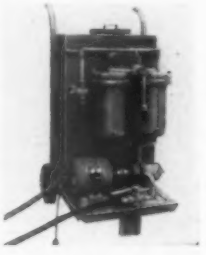
MODEL 750 drill jig is for cross-drilling operations on a variety of work stock diameters and in a variety of hole sizes on such parts as pins, small shafts, tubing, screws and screw machine parts, etc. It is said to be efficient for tool room, experimental department or production line. Cam action is employed to actuate anvil up and down, to and from locking position. Bushing plates accommodate standard slip bushings to 11/32" hole size. Double-end anvils take round work stock from ⅛" to ¾" diameter. *Manufacturer's Engineering Service, Security Bldg., Room 442, Toledo 4, O.*

TOWER CONVEYOR SYSTEM



VERTICAL-tower oven conveyor system, provides a tower containing Burdett equipped gas-fired oven, through which the conveyor runs, and carries work which has been painted to be baked or dried. The tower can extend through the roof of the plant if necessary, and the conveyor is adaptable to meet the requirements of the particular plant. In illustration pieces move forward on an entry conveyor and are picked up automatically by the extended pins on the vertical tower-oven conveyor. Further information available. *Dept MT-117, Ace Conveyor Industries, Inc., 134 Woodmere Ave., Detroit 9, Mich.*

PORTABLE OIL FLUSHER



INTERNAL cleaning of machinery without disassembling by skilled mechanics is said to be possible with the Lubey portable oil flusher. Organic solvents, kerosene or lubricating oil can be shot through the inspection or cleanout openings of housings around bearings, gears or cranks, by means of a high pressure nozzle jet. Safety control device permits reduction of flow to a gentle flushing stream. Residue may be drawn out through drain connections or by suction hose, and collected in a filter. The unit may be used as a simple lubricating oil circulating system. *Fox River Tool Co., Menasha, Wis.*

(*Please turn to page* 176)

"wanna start somethin'?"

use a GE motor starter

These G-E combination starters give your motors money-saving protection—three ways. Providing short circuit, overload and undervoltage protection, they save you installation costs because fuses, disconnect switch and magnetic starter are all in one unit. Whatever your operating condition, there's a combination starter to do the job. See bulletin GEA-3571A for details.

MORE G-E STARTERS General Electric has a complete line of motor starters, manual or magnetic, full- or reduced-voltage, reversing or nonreversing from 1 to 1000 horsepower ratings. All G-E starters come in a variety of enclosures. For more information on all G-E starters, including those shown below, ask your nearest G-E office for catalog GEA-642. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

CR1061 G.E.'s smallest, most inexpensive starter for manual control of single-phase, f-hp motors.

CR1062 Sturdy, low-priced starter for manual control of single and three-phase motors up to 7½ hp.

Polishing off "Mix-All" food and drink containers is the job of this unique, automatic, rotary table-type buffing machine built by the Square Deal Machine Company of Los Angeles for Western Die Casting Company. Continuity of operation is assured because combination starters, in one compact unit, protect your motors from short circuits, overloads, and undervoltages.

CR1034 A simple, manual, reduced-voltage starter for preventing voltage dips and shock from too sudden starting of motors ranging from 5 to 200 hp (four sizes).

GENERAL ELECTRIC

826-814

"... and these strong, absorbent STRAUBEL paper towels are the best way in the world to economize on washroom costs"

THE PROFESSOR'S RIGHT, FOLKS— THERE'S FAR LESS WASTE BECAUSE ONE TEXTURIZED TOWEL TAKES THE PLACE OF TWO!

IMMEDIATE DELIVERY ORDER YOUR SUPPLY **NOW!**

Write for name of the paper merchant best located to serve you.

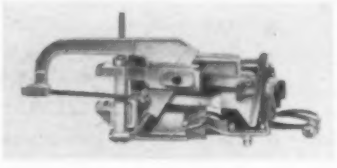
Straubel
TOWELS & TISSUE

STRAUBEL PAPER CO. • GREEN BAY, WIS.

RETRACTILE TEST LEADS

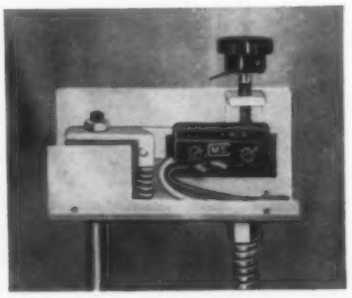
TEST leads are made in 48" retracted lengths which will extend to 20 feet. The 48" retracted coil may be cut into any desired length. The ratio is 1 foot to 5 feet extended. Any type of test lead terminals may be applied to the cords as easily as to straight cord, maker states. The test leads do not leave dangling, tangling wires to pull over equipment or to be tripped over, it is claimed. *Koiled Kords, Inc., Box K, Hamden, Conn.*

PORTABLE POWER HACK SAW



HAND-I-HAK is a light weight portable power hack sawing machine which can be carried with one hand and operated from any 110 volt a-c outlet. It can be used for cutting conduit, small sawing jobs in die making and fixture work, by plumbers and pipe fitters, etc. Its sawing action eliminates the use of weight and is adjustable for cutting in a range from solid tough materials to thin-wall tubing, etc. The vice is swivel mounted and calibrated for cutting accurate mitres. Sawing can be done in any position. *Lipe-Rollway Corp., Syracuse, N. Y.*

TEMPERATURE SWITCH

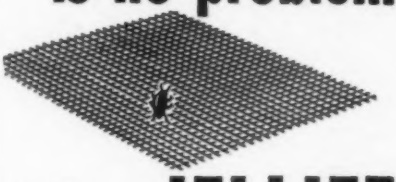


MODEL L temperature switch has a normal maximum temperature of about 350 F, and can also be supplied for higher temperatures. For low temperatures the operating differential is plus or minus ½ degree. At highest temperatures it is plus or minus 2 to 5 degrees. It is available with flexible conduit and twist as shown, or with other types of plug-in connectors. Literature available. *Burling Instrument Co., 253 Springfield Ave., Newark 3, N.J.*

(*Please turn to page* 178)

MESH SIZE

is no problem



for JELLIFF

For quality wire mesh — contact Jelliff — makers of wire mesh products for over sixty years. Commercial sizes available in standard lengths of 100 feet and widths of 24 to 72 inches. Meshes of specified gauge and weave made and cut to order. Available crimped, calendered and rolled. Jelliff engineers keep abreast of current developments in new alloys, coatings and processes and apply them when studying your requirements. For best results and maximum economies, look to Jelliff.

Write DEPT. 208 For Literature

LEKTROMESH • RESISTANCE WIRE • FILTERS • STRAINERS • WIRE CLOTH • PARTS • WIRE MESH • DIPPING BASKETS

The C. O. JELLIFF MANUFACTURING CORPORATION
SOUTHPORT, CONN.

WIRE PRODUCTS SINCE - 1860

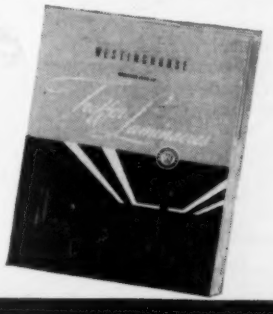
For Offices WESTINGHOUSE PLANNED LIGHTING PAYS

HERE'S WHY. The kind of lighting in any office has a decided effect on the efficiency of employes. Poor fixtures and poor planning can cause eyestrain, increased errors, reduced efficiency. But, with Westinghouse Planned Lighting and equipment, you get the right amount of light for each office task...eliminating glare and eyestrain...and giving the office a distinctive modern appearance.

THE RIGHT EQUIPMENT. The new Westinghouse Troffers . . . concealed in the ceiling . . . give both distinctive appearance and better lighting. Adapted to any type of suspended ceiling . . . designed to fit the 12-inch block pattern of most acoustical ceilings. Available with egg-crate louvers, cross baffles, glass bottom or open. Easy to install . . . easy to maintain.

In addition to Troffers, Westinghouse makes a wide line of lighting equipment for every need. Write today, for a copy of Troffer Book B-3959. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-04163



Your local power company and electrical contractor will be glad to help with your planning

Westinghouse

PLANTS IN 25 CITIES OFFICES EVERYWHERE

Westinghouse Electric Corporation • Lighting Division • Cleveland, Ohio

COMMERCIAL • INDUSTRIAL • FLOOD • STREET • AVIATION

Services of a Lighting Sales Engineer are available through your near-by Westinghouse distributor

New Colson Easload Truck

ON

General Industrial Pneumatics

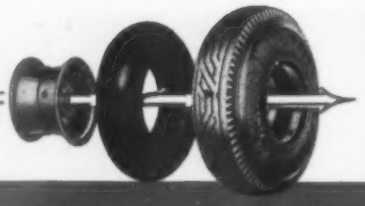
SAVES TIME • MONEY • LABOR
MOVES LOADS EASIER, FASTER

New kind of truck takes the load off the worker, puts it on the wheels. Wheels remain locked in forward position until released by foot pedal. With wheels forward truck can slide on tubular handles.

Manufactured by Colson Equipment & Supply Co. 1317 Willow St. Los Angeles 13

When released from forward position wheels shift into rear position where they lock to carry the load. Small wheels under nose plate make truck and load easy to handle. 10-inch rubber tired wheels support heaviest appliances.

The GENERAL TIRE



General Industrial Pneumatic tires are available either by themselves or in complete tire-tube-wheel assemblies. Write for the new catalog that tells you how to save money with General Industrial Pneumatics.

THE GENERAL TIRE & RUBBER CO.
Akron, Ohio

HEAVY DUTY SOAP DISPENSER

LATHURSHELF combination shelf and liquid soap dispenser is made of 18-8 polished stainless steel and has a capacity of ½ gallon. A measured amount of lather is dispensed with each stroke. Leaking or dripping is said to be avoided because the soap must be pumped. Any grade of 8% to 20% liquid soap may be used. Key supplied for snap lock on cover. Visible gauge indicates liquid level. 20" long, 4½" wide, 2" high. Also supplied with two lather valves. *American Dispenser Co., 215 Fourth Ave., New York 3, N. Y.*

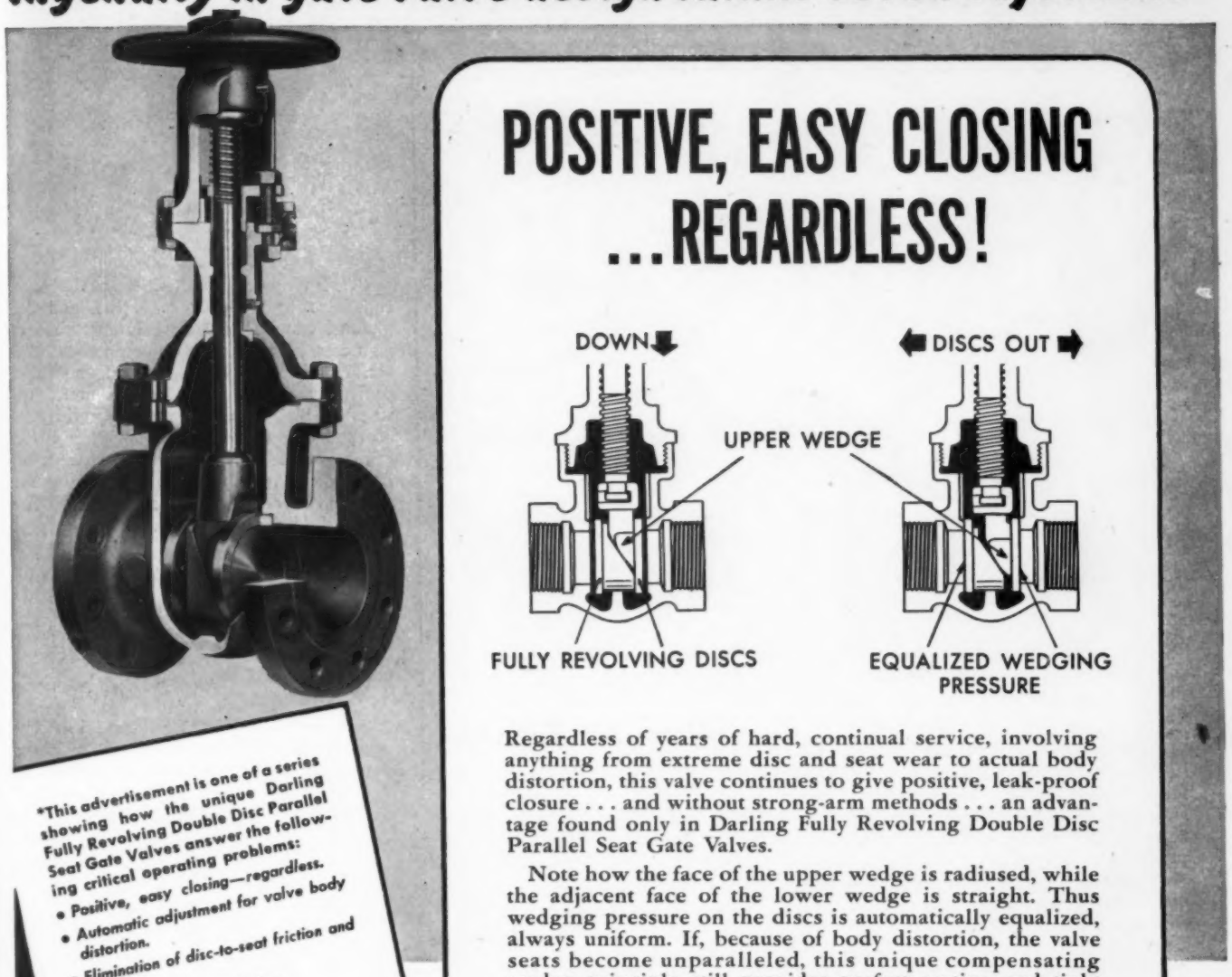
WIRE STRIPPER

ILLUSTRATION shows automatic model of Speedex wire stripper with "stay open feature" for stripping fine standard wires. The jaws are automatically held open until the wire is removed. The tool is said to strip all types of fine stranded wire without crushing, and can be used on solid wire. "On and off" mechanism allows automatic model to be used as standard model. The stripper strips wire sizes No. 8 to No. 30. 750 to 1000 wires can be stripped per hour, according to manufacturer. *General Cement Mfg. Co., 919 Taylor Ave., Rockford, Ill.*

WEATHERIZED FLUORESCENT FIXTURE

HF-100 fluorescent fixture for industrial use is weatherized with a finish that is said to be highly resistant to rust, corrosion, pitting and crazing, under damp and deteriorating atmosphere conditions. The finish on the reflector furnishes a reflection factor of not less than 86% and a resulting light efficiency of 85%. The top-housing is made from a single sheet of steel, eliminating all internal cross-bracing, nuts, bolts or welds to hold the chassis together. Designed as a two-lamp fixture, the HF-100 is equipped with knockouts to provide for a third lamp if greater intensity is desired. *Sylvania Electric Products, Inc., Ipswich, Mass.*

*Ingenuity in gate valve design fulfills seven objectives**



*This advertisement is one of a series showing how the unique Darling Fully Revolving Double Disc Parallel Seat Gate Valves answer the following critical operating problems:

- Positive, easy closing—regardless.
- Automatic adjustment for valve body distortion.
- Elimination of disc-to-seat friction and galling.
- Uniform wear distribution.
- Extreme simplicity.
- Greater service life.
- Simplified maintenance.

POSITIVE, EASY CLOSING ...REGARDLESS!

Regardless of years of hard, continual service, involving anything from extreme disc and seat wear to actual body distortion, this valve continues to give positive, leak-proof closure . . . and without strong-arm methods . . . an advantage found only in Darling Fully Revolving Double Disc Parallel Seat Gate Valves.

Note how the face of the upper wedge is radiused, while the adjacent face of the lower wedge is straight. Thus wedging pressure on the discs is automatically equalized, always uniform. If, because of body distortion, the valve seats become unparalleled, this unique compensating wedge principle still provides perfect seating and tight closure without forcing.

The discs themselves are free to revolve fully and seat in a different position at every closing. Uneven wear, another common cause of leaks, is definitely avoided.

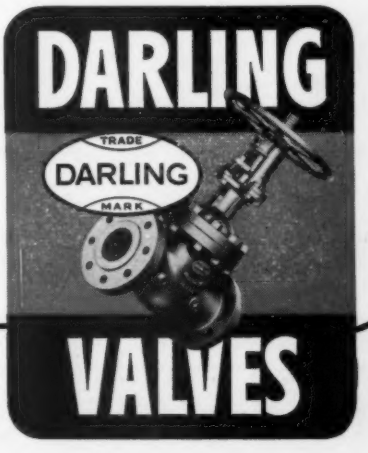
Combine these unique features—automatic seating adjustment and uniform wear—and it's easy to see why these Darling Valves can always be counted on for positive, easy closing—regardless!

DARLING VALVE & MANUFACTURING CO.
Williamsport 7, Pa.

Darling Parallel Seat Gate Valves are available in a wide range of sizes and for all types of normal and unusual service, and for pressures up to 3000 pounds. Likewise, Darling Taper Seat, Solid or Slotted Wedge Gate Valves are available for most services.

Corrosion resistant valves. *In addition to conventional iron, bronze and steel types, Darling specializes in valves for any corrosive fluid: iron body valves with special alloy trim; iron body, rubber lined, with special alloy trim; all bronze; and all special alloy. Darling's 60 years of experience in meeting unusual requirements is always at your service.*

Outline your needs and ask for specific data on the proper Darling Valves... or send for the complete 300-page Darling Catalog No. 17M. It describes Darling Valves of *all* types and is full of valuable information.



THE VALVE MARK OF QUALITY...WATCH FOR IT

Here's how to harness that "shortage" nightmare

To get supplies and equipment *fast* and lick your shortage problems, specify shipment by Air Express. It's the *fastest possible way* to ship and receive. There's no time wasted at airports because Air Express goes on every flight of the Scheduled Airlines. And you get door-to-door service at no extra cost.

Rates are so low it pays you to use Air Express regularly. And Air Express is inexpensive for the heaviest weight shipments, too. Standardize on this speedy, low-cost business service.

Call on Air Express

Specify Air Express-World's Fastest Shipping Service

- Low rates—special pick-up and delivery in principal U. S. towns and cities at no extra cost.
- Moves on all flights of all Scheduled Airlines.
- Air-rail between 22,000 off-airline offices.

True case history: Trailer replacement parts are regularly Air Expressed from Kansas City factory. Keeps valuable equipment rolling. Typical shipment: 31-lb. carton picked up 2 P.M. the 11th, delivered Los Angeles, Cal., the 12th, 7 A.M. 1360 miles, Air Express charge only $13.32. Any distance inexpensive, too. Phone your local Air Express Division, Railway Express Agency, for fast shipping action.

AIR EXPRESS

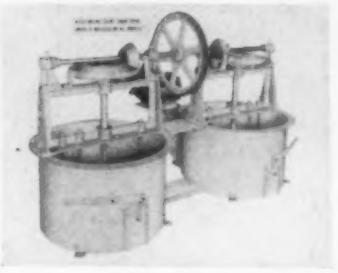
AIR EXPRESS GETS THERE FIRST

Rates include pick-up and delivery door to door in all principal towns and cities

AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE

SCHEDULED AIRLINES OF THE U. S.

TWIN-TUB PASTE MIXER

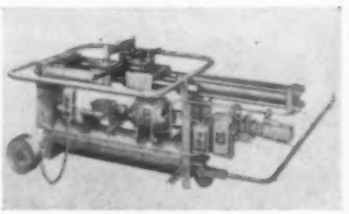


THIS twin-tub paste mixer, available in capacities (per tub) of 110, 150, and 225 gallons, can be used by manufacturers of pigments, petroleum products, chemicals, etc. A full variety of electrical and drive equipment is available for the unit. Adjustable blades revolve at approximately 60 rpm. One user of the 150 gallon model has reported mixing of twin batches of 150 gallons (300 gallons in all) in 1(minutes. *Morehouse Industries, 1156 San Fernando Rd., Los Angeles 31, Calif.*

OXY-ACETYLENE WELDING TORCH

AIRCO 800 oxyacetyline welding torch weighs 1½ lbs., is only 11½" long, and has a capacity for operating single flame welding tips from Nos. 0-13 inclusive as well as multi-flame tips up to No. 15. It is said to be suitable for almost any welding job from the thinnest sheet metal up to 1½" in thickness. Features claimed are better flame control, low maintenance costs and modern design assuring perfect balance and ease of manipulation. Free demonstrations. *Dept. 1046, Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.*

RAM TYPE BENDING MACHINE

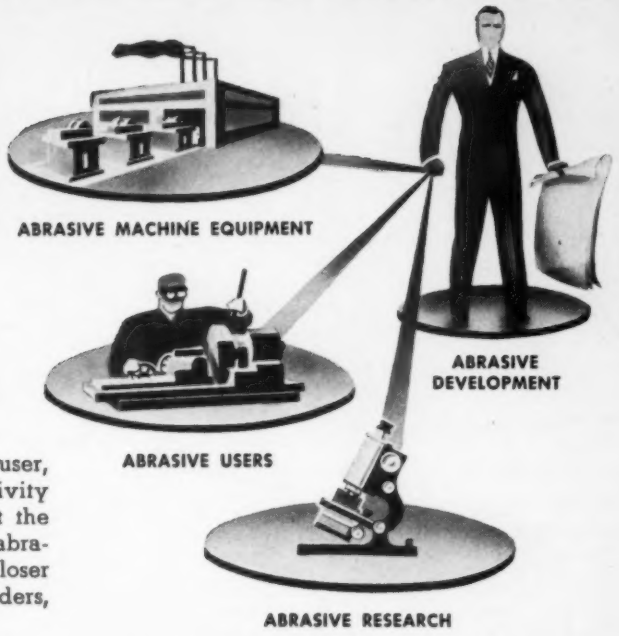


PORTABLE, hydraulic, ram type bending machine, No. 1402, employs a simplified method of ram bending, in which no repositioning of the dies nor relocating of the pipe is necessary when bending up to 180° in one continuous operation. The unit is equipped with standard die equipment for bending up to 2" extra heavy weight steel pipe. Special dies are available for angle iron, channels, reinforcing bars, etc. "Jog" button is provided to facilitate setups or accurate duplications of special parts formed to templates. Bulletin No. 34, Section K, available. *Wallace Supplies Mfg. Co., 1308 W. Diversey Pkwy., Chicago 14, Ill.*

(*Please turn to page* 182)

A BUYING GUIDE FOR ABRASIVES

ABRASIVE PROBLEM:
Is there a better abrasive or technique for the job?



ANSWER BY
CARBORUNDUM
TRADE MARK

Key step between research and abrasive user, "Product Development" is an important activity at The Carborundum Company. Aimed at the development and application of the right abrasive in the right place, it brings about closer cooperation among abrasive machine builders, abrasive users, and our own research.

Products and techniques are rigidly tested and evaluated for both grinding wheels and coated abrasives. Suggestions are investigated and analyzed. Vital information is collected and interchanged. Facts and figures are checked and correlated. The net result is realized in more effective selection and application of abrasives ... another reason for preferring products by CARBORUNDUM. The Carborundum Company, Niagara Falls, New York.

A Good Rule for Good Grinding... CALL IN

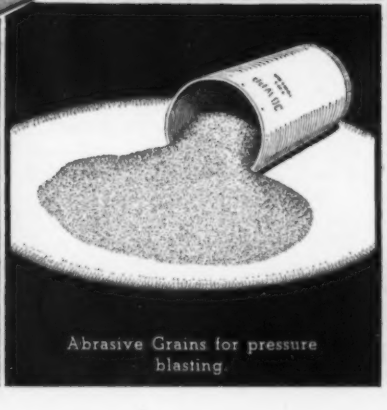
CARBORUNDUM
TRADE MARK

BONDED ABRASIVES
COATED ABRASIVES
ABRASIVE GRAINS AND FINISHING COMPOUNDS

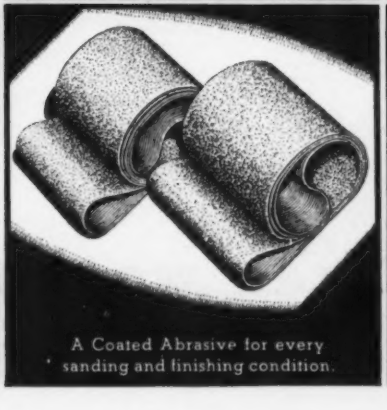
Tool Room sticks and stones that cut fast... last long... and hold their form.

A variety of rolls for a wide range of uses.

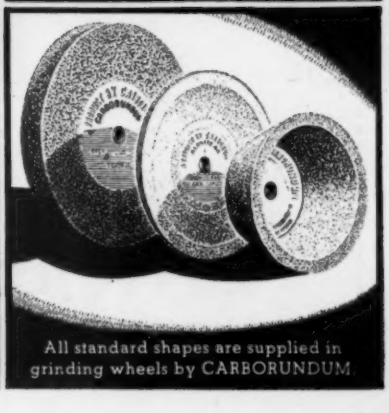
"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company.



Abrasive Grains for pressure blasting.



A Coated Abrasive for every sanding and finishing condition.



All standard shapes are supplied in grinding wheels by CARBORUNDUM.

P. A. Saves Time

Chicago P. A. writes: "Ordering was a real headache because we used many components from several sources in our products. But one day the Boston Gear Catalog gave me a great idea. A check showed I could get over 70% of our gears, speed reducers, chains, sprockets and other parts from this one source . . . and at competitive prices! Furthermore, I could get quick delivery from a nearby distributor. I gave copies of the catalog to the production and maintenance supervisors and got them to specify by catalog number. It cut my work in half!"

Simplifies Design Problem

"The Development Superintendent was amazed by the way I simplified the problem of designing our new textile machine," says P. W. "By using stock products listed in the Boston Gear Catalog, I cut design time 'way down. There were 101 groups of products and 4326 separate stock items listed — with specs and data on each. It certainly cut out a lot of engineering work . . . and we really beat our budget figures on that job!"

Send in your experience in cost, time, or work savings made possible by the Boston Gear Catalog.

Manufacturer Cuts Costs

E. P. L. writes: "I give the Boston Gear Catalog direct credit for boosting my profits. For years we'd made every component in our mixing machines. But one day, looking for a quick source of high-quality commercial gears, I checked the Boston Gear Catalog and found drive components that exactly filled my needs . . . and at a lower price than we could make them! When I found I could get quick delivery from a nearby distributor, I standardized on the Boston Gear line. The savings in engineering and production time, plus lower unit costs, add up to higher profits for me."

Put this great data book to work earning for You!

FREE This valuable data book which shows you how to make important savings in design, manufacturing and maintenance costs using Boston *Stock* Component Machine Parts. Contains 101 separate groups of products — gears, chain, sprockets, speed reducers, etc. — 4326 individual items — engineered, mass produced to custom standards for your application. Also contains much valuable working data for designers, engineers, maintenance men.

Name ..... Position .....

Company .....

Street .....

City ..... Zone ..... State .....

BOSTON GEAR WORKS

One of the world's most complete lines
62 distributors in major cities

21 Hayward Street
Quincy 71, Massachusetts

SILICONE RUBBER MOLDING COMPOUNDS

Announcement is made by the General Electric Company's Chemical Department Pittsfield, Mass., of the marketing of seven standard grades of G-E silicone rubber molding compounds to molders and fabricators. All stocks withstand temperatures ranging from minus 70° to plus 520° F and have excellent electrical and chemical properties.

Stocks available include both molding and extruding compounds which may be readily processed in customary production equipment. Grades 13000 and 13001 are extrusion stocks in white; grade 13002 is a molding stock in white; grades 13003, 13005 and 13006, are brown stocks for both extrusion and molding; grade 13004 is white for both extrusion and molding.

Samples of G-E silicone rubber products

The company says molding should be performed at low pressures in standard compression or transfer molds. Flash type molds give the most satisfactory results at pressures not exceeding 100 psi whereas positive or semi-positive molds are usually operated at 400 to 500 psi.

Extruding of silicone rubber stocks is performed n either short or long barrelled production machines, but the latter is preferable, it is said.

Uses for silicone rubber now include gaskets for high speed shafts, diesel gasoline, jet and gas turbine engines, baking and drying ovens, higher temperature lighting equipment, high vacuum systems, capacitor bushings, etc.

The company recently announced a new silicone rubber adhesive which permits bonding of fully-cured rubber to itself and other surfaces.

TEST FOR REUSE OF SINGLE TRIP CONTAINERS

Testing single-trip steel drums for approval by the Bureau of Explosives (for reuse) by authority of Campbell's ICC No. 4 is a simple operation which can be performed by your own forces. For example "each container shall be tested with seams under water, or covered with soapsuds or heavy oil, by interior air pressure of at least 7 lbs. per square inch for containers over 12 gallons capacity, and at least 5 pounds for others; leakers shall be rejected or repaired and retested." (Specification LCC 17-E, par. 14).

This authority, Section 28(h) Campbell's ICC No. 4, is a continuing one,

(*Please turn to page* 186)

UNLESS YOU HAVE "MONEY TO BURN" READ THIS---

Every year, more than 11,000 lives are lost by fire. Last year, property loss through fire reached a staggering total of more than $600,000,000.

Insurance can give you protection from financial loss through fire. But you need more than protection. You need fire prevention. Fire prevention can help you avoid property loss and—even more important—loss of human life.

The best possible fire prevention you can buy is a GENERAL QUICK AID FIRE GUARD, located within easy access of every possible fire hazard.

Unless you have plenty of money to burn, install plenty of QUICK AID FIRE GUARDS in your place of business, your car, your home. There are five different types of QUICK AID FIRE GUARDS—a right extinguisher for every fire hazard. Your GENERAL dealer will help you select proper extinguishing equipment—without obligation on your part. Look for his name under "Fire Extinguishers" in your classified telephone directory—or write direct.

GENERAL
QUICK AID
FIRE GUARD

THE GENERAL DETROIT CORP.

DETROIT 7, MICHIGAN
NEW YORK • PHILADELPHIA • ATLANTA • CHICAGO • DALLAS

Subsidiaries:

THE GENERAL PACIFIC CORP.
LOS ANGELES • SAN FRANCISCO • SEATTLE

THE GENERAL DETROIT CORP., CANADA, LTD.
TORONTO • MONTREAL

NEW *Life-Line* MOTORS NOW AVAILABLE

WESTINGHOUSE NOW OFFERS *IMMEDIATE DELIVERY* ON *STANDARD* LIFE-LINE MOTORS . . . IN RATINGS FOR 60% OF INDUSTRY'S REQUIREMENTS

To meet industry's urgent need for more—and better—motors, Westinghouse embarked two years ago on the biggest engineering and manufacturing program ever undertaken in this field.

Industrial buyers were surveyed to find the improvements most desired in existing standard motors. These improvements were incorporated, for the first time, in a single motor—the Life-Line—*a motor designed, from scratch, to user specifications.*

To build the Life-Line motor, a complete new plant was purchased, tooled and equipped from the ground up, with machines and new techniques never used before to manufacture motors.

Today, we announce the attainment of our first objective.

The new Life-Line motor is now available from stock, in standard types from 1 to 15 hp.

This objective was selected as of first importance, since 60% of standard, integral horsepower motors required by industrial users fall in this classification. Motor types included in stock are described on the opposite page. On "near-standard" motors, also described, short deliveries are available in these sizes.

Improved deliveries on special types and larger ratings will be the subject of future announcements, as quickly as increased output makes them possible. Watch for them . . . phone your orders from this stock list to your nearest Westinghouse representative. Westinghouse Electric Corp., Box 868, Pittsburgh, Pa.

J-21447-A

WESTINGHOUSE

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

FROM 1 to 15 HP FROM STOCK

WHAT IS MEANT BY "STANDARD" MOTORS

"Standard" motors include drip-proof, splash-proof, totally-enclosed, fan-cooled and some totally-enclosed, non-ventilated complete motors, ball-bearing type, having standard electrical characteristics (220/440 volt, 2 or 3-phase, 50 or 60-cycle, standard speed torque and time-temperature characteristics).

Available from stock in ratings indicated below. Very short delivery on any standard non-stock rating in these frame sizes.

TYPES INCLUDED AS "NEAR-STANDARD" MOTORS

"Near-standard" motors are those with minor modifications, which include such items as double shaft extensions, NEMA standard B and C flanges, special No. 1 insulation, round frame, conduit box opposite standard, squeeze connectors instead of conduit box, TENV motors, partial motors, 50-cycle, 40° C. rise open motors, etc.

Short delivery in frame sizes listed below.

Life-Line A-C, Single-Phase, 60-Cycle, 110-220-Volt, Heavy-Duty Type CAP Capacitor-Start, Induction-Run Motors

HP	RPM	FRAME	VOLTS	IN STOCK
1	1750	203	220	√
1½	1750	204	220	√
2	1750	224	220	√
3	1750	225	220	√

Life-Line A-C, 3-Phase, 60-Cycle, Squirrel-Cage Motors

HP	RPM	Frame	Volts	ENCLOSURE TYPES IN STOCK		
				Drip-Proof	Splash-Proof	Totally Enclosed
½	860	204	220/440	√		√
¾	1150	203	220/440	√		√
	1150	203	550	√		√
	850	224	220/440	√		√
1	1750	203	220/440	√		√
	1150	204	220/440	√		√
	850	225	220/440	√		
	850	225	550	√		
1½	3450	203	220/440	√	√	
	1750	204	220/440	√		√
	1150	224	220/440	√		√
	860	254	220/440	√		
2	3450	204	220/440	√		
	3450	204	550	√		
	1750	224	220/440	√	√	√
	1750	225	220/440			√
	1150	225	220/440	√	√	√
	860	254	220/440	√		√
	860	254	550	√		
	710	284	550	√		
3	3450	224	220/440	√		
	3450	224	550	√		
	1750	225	220/440	√	√	√
	1750	225	550			√
	1135	254	220/440	√	√	√
	875	284	220/440	√		
5	3450	225	220/440	√	√	
	1735	254	220/440	√	√	√
	1735	254	550	√		
	1200	284	220/440	√	√	√
	875	324	220/440	√		
7½	3470	254	220/440	√		
	1740	284	220/440	√	√	√
	1740	284	550	√		√
	1160	324	220/440	√		
	865	326	220/440	√		
10	3500	284	220/440	√	√	
	1740	324	220/440	√		√
	1740	324	550			√
	1155	326	220/440	√	√	
	870	364	220/440	√		
15	3500	324	220/440	√		
	1750	326	220/440	√	√	
	1160	364	220/440	√		
	1160	364	550	√		
	875	404	220/440		√	

Subject to prior sale.

Life-Line motors

MORE PRODUCTIVE POWER FOR INDUSTRY

OUT OUR WAY

THIS ONE SAYS THAT IT'S JUST AS GOOD AS SOL-SPEEDI-DRI-- AND IT'S A QUARTER OF A CENT PER POUND CHEAPER!
DON'T GIVE ME THAT! THERE AIN'T ANYTHING AS GOOD AS SOL-SPEEDI-DRI! AND I'D PAY A QUARTER OF A CENT A POUND MORE ANY DAY TO BE SURE I'M GETTING MY MONEY'S WORTH! DON'T COME IN HERE AGAIN WITH THAT "JUST AS GOOD" STUFF! WE'RE STICKING TO SOL-SPEEDI-DRI!
STILL AN OLD MAIN STREET BOY -- STILL BELIEVES IN GETTING THE BEST FOR THE JOB--NOW YOU SEE WHY HE'S THE BOSS!
TELLIN' 'EM OFF
J.R.WILLIAMS
T. M. REG. U. S. PAT. OFF. COPR. 1946 BY NEA SERVICE, INC.

Be Safe . . . Be Sure . . . Use SOL-SPEEDI-DRI

People who use SOL-SPEEDI-DRI—industry's original and foremost absorbent for all liquids—have learned that they can count on the uniformly high quality of SOL-SPEEDI-DRI. They have learned, too, that SOL-SPEEDI-DRI costs *less* because it does *more* work . . . because it is always efficient, always dependable.

Yes, it's quality all the way with SOL-SPEEDI-DRI . . . quality that assures you cleaner, brighter, safer floors . . . freedom from slips and falls caused by dangerous, slippery surfaces. Obtained by selective mining, laboratory-checked hourly, and processed by the most modern methods and equipment, SOL-SPEEDI-DRI comes to you in special weatherproof bags, *every* pound at peak efficiency. Remember the name . . . SOL-SPEEDI-DRI!

WHEN YOU BUY, BE *SURE* IT'S SOL-SPEEDI-DRI!

Safety and Maintenance Co., Inc., No. 1 Wall St., New York 5, N.Y.

Warehouse Stocks Maintained in Principal Cities of the United States and Canada

(*Continued from page* 182)

until further order of the Interstate Commerce Commission, and no measures to cancel or modify are presently being initiated, nor are they likely to be until new drums are again in reasonably plentiful supply—*Weekly Letter, National Paint, Varnish and Lacquer Association, Inc.*

MACHINE SEGREGATES PARTS INTO 27 CLASSIFICATIONS

A gaging machine that automatically segregates lapped finish parts into 27 classifications without marring them has been designed and built by the Sheffield Corporation of Dayton, Ohio, for a large manufacturer of electric refrigerators. By means of airflow jets and Airlectric gaging heads, the plates are checked and segregated into three .0004" major classifications of diameter, which are segregated into eight acceptable .0003" classifications of thickness. Rate of inspection is 3,000 plates per hour at 100 per cent efficiency.

G.E. TO MARKET PHENOLIC LIQUID RESINS AND VARNISHES

The General Electric Chemical Department, Pittsfield, Mass., announces that it is making four grades of G-E phenolic liquid resin and two grades of G-E phenolic varnished. All grades are thermosetting plastics which condense on heating to form insoluble, infusible materials useful in a variety of laminating impregnating, and binding applications.

Grades Nos. 12300, 12302, 12303, and 12304 are phenolic liquid resins. They find wide use in electrical coil insulation and give excellent service in high temperature coil insulation in motor field coils, air blast transformer coils and heater coils They are also recommended as binders or adhesives for glass wool insulation mats and for making panels from sawdust and wood chips.

G-E phenolic varnishes are available in Grades Nos. 12301 and 12305. G-E recommends that they be used wherever a strong chemically resistant thermally insulating binder is required. Both possess excellent electrical properties and high mechanical strength and are recommended for laminating sheets, tubes, and gears.

(*Please turn to page* 188)

BEAT THE STEEL SHORTAGE

-use Steel that DOES more!

By replacing carbon steel with U·S·S COR-TEN or U·S·S MAN-TEN where economically applicable, you can:—

1. Make your steel supply go one-third farther, NOW.

By taking advantage of the higher physical properties of these steels you can use thinner sections to produce units that weigh one-fourth less—that are substantially stronger and more durable—that require one-fourth less steel per unit. As a result you can produce as much as one-third more units from every ton of steel used.

2. Make better products—lighter, long lasting and generally more profitable to the user, NOW.

In addition to saving steel, lightweight construction with steel that *does* more has other proved economic advantages. Every pound of weight saved pays off in reduced operating costs, increased capacity to do work, and lower maintenance expense. These steels, by saving weight, make equipment more efficient—more productive.

3. Satisfy more customers, NOW.

The one-third *additional* units you can turn out, —without using more steel—mean that you can serve more customers, create more good will, and make more money because you have more units to sell. And you can do this NOW—without waiting for the completion of new steel making facilities.

4. Get these benefits at little or no greater cost per unit than NOW.

Because both U·S·S COR-TEN and U·S·S MAN-TEN, like plain carbon steel, can be readily fabricated—because one fourth less steel is required per unit, with consequent reduction in shipping costs – because fixed charges can be spread over one-third more units—your finished product can be built at little or no increase in cost. Frequently, as in the case of freight cars, mine cars, trucks and trailers, it may actually cost less per ton of capacity.

TO HELP YOU *adapt these steels to your product* immediately— *and with least change in your shop methods—we have a special metallurgical and engineering staff thoroughly familiar with what these steels can do. Phone, wire or write.*

U·S·S COR-TEN · U·S·S MAN-TEN · U·S·S ABRASION-RESISTING · U·S·S MANGANESE-NICKEL-COPPER

USS HIGH STRENGTH STEEL UNITED STATES STEEL

8-309

UNITED STATES STEEL AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY, Warehouse Distributors—Coast to coast · UNITED STATES STEEL EXPORT COMPANY, New York

It's quiet as a whisper, Sir!

You're looking for gears that are seen but not heard? Gears that operate long and silently in automotive timing mechanisms, or other applications where silence is imperative?

Ask your gear-cutter for Taylor Silent Gears!

Made of resilient Taylor Phenol Fibre, Taylor Silent Gears eliminate noisy metal-to-metal contact . . . minimize vibrations . . . absorb shocks. Reduce wear, too. Practically immune to dirt, dust, grease, oil, or chemicals.

Your gear-cutter can give you full information. He may have in stock the Taylor Gears you need; if not, he'll produce special Taylor Gears precisely to your specifications. If you prefer, write direct to Taylor Fibre Company. Our engineers will be glad to cooperate with you, either in the blueprint stage or later.

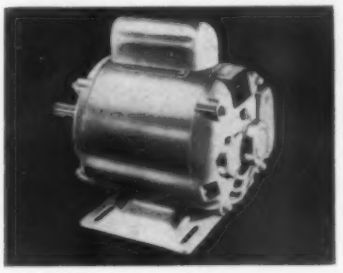
TAYLOR FIBRE COMPANY

LAMINATED PLASTICS: Phenol Fibre • Vulcanized Fibre
Sheets, Rods, Tubes, and Fabricated Parts

Norristown, Penna. • Pacific Coast Plant: La Verne, California
Offices in Principal Cities

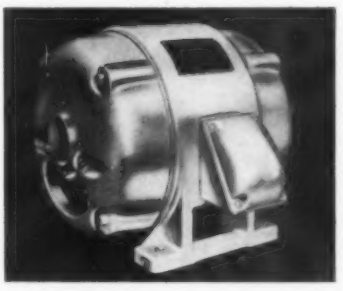
THREE NEW LINES OF GENERAL-PURPOSE MOTORS

Three new lines of general-purpose electric motors, known as "Permamotors" are announced by the A. O. Smith Corporation of Milwaukee. The motors are manufactured by the A. O. Smith Electrical Mfg. Co., a wholly owned subsidiary. Factories are located in Milwaukee, Kankakee, Ill., Houston, and Los Angeles. The new lines include (1) fractional h-p rating motors, (2) integral h-p ratings, single phase motors; and (3) integral h-p ratings polyphase motors.



Fractional h-p Permamotors are available in the 56 and 66 frames with NEMA mounting dimensions.

The fractional h-p motors are of the general purpose, capacitor start, single phase type. Available in the 56 and 66 frames with NEMA mounting dimensions, they feature simple, rugged squirrel cage rotors with quiet-operating positive - acting switches. Complete description is contained in Bulletin 1001.



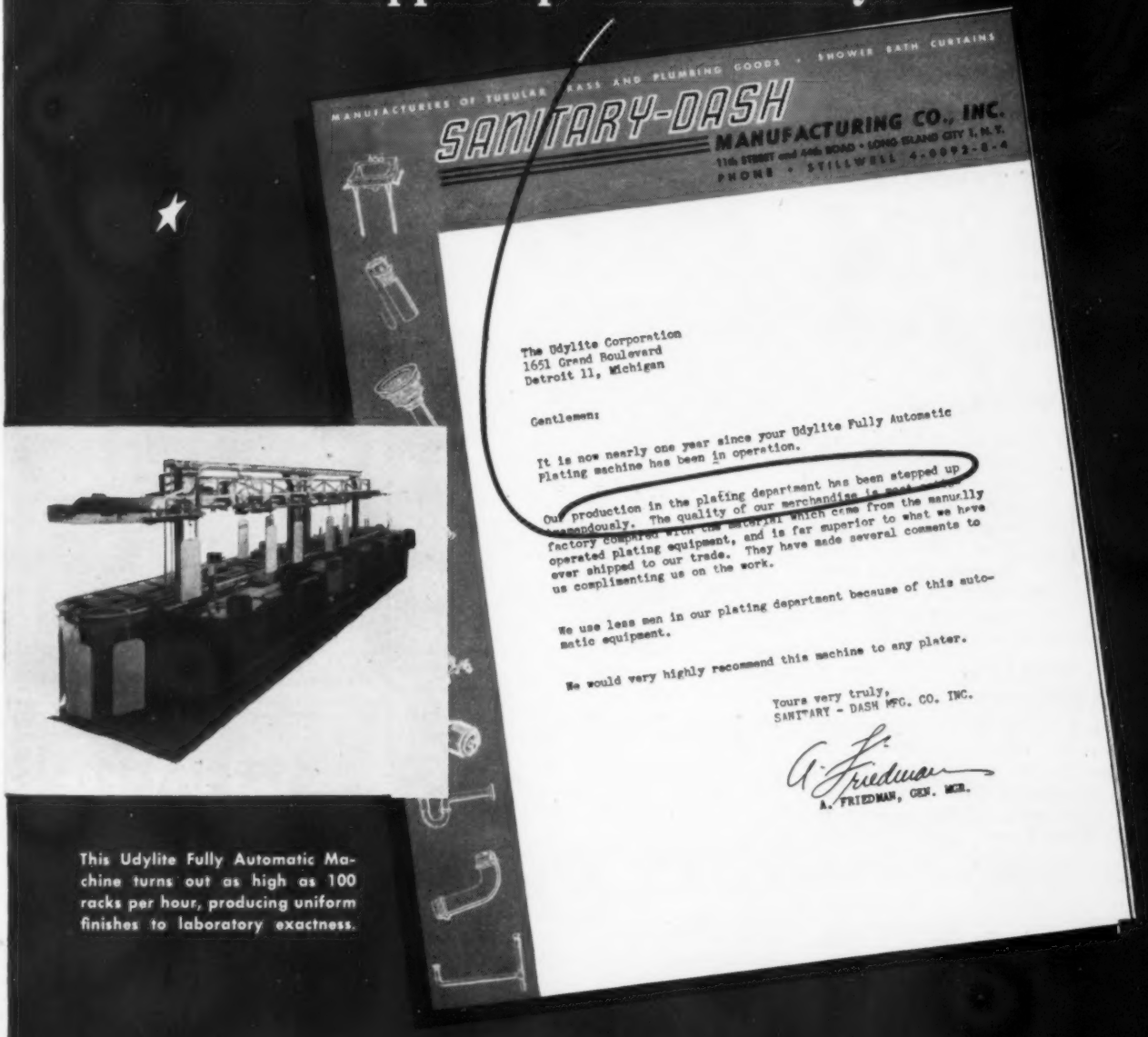
Integral h-p Permamotors are available 1 to 5 h-p, in frames 203-4, 224-5, with NEMA mounting dimensions.

Integral h-p motors are of the single phase, general purpose, capacitor start type. They are available 1 to 5 h-p, in frames 203, 204, 224 and 225 with NEMA mounting dimensions. Starting capacitors are in the starting windings. However, motors are essentially squirrel cage motors in design. Capacitors are cut out when motor reaches a predetermined speed by positive-acting enclosed voltage relay. Motors will run either clockwise or counter clockwise by proper connection of lead wires. Bulletin 1101 describes them in detail.

Bulletin 1201 describes the polyphase, squirrel cage induction motors which are available in frames 203-326 with NEMA mounting dimensions. Motor is protected against dripping moisture and falling ob-

(*Please turn to page* 190)

"...production in the plating department has been stepped up tremendously!"


MANUFACTURERS OF TUBULAR BRASS AND PLUMBING GOODS • SHOWER BATH CURTAINS
SANITARY-DASH
MANUFACTURING CO., INC.
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The Udylite Corporation
1651 Grand Boulevard
Detroit 11, Michigan
Gentlemen:
It is now nearly one year since your Udylite Fully Automatic Plating machine has been in operation.
Our production in the plating department has been stepped up tremendously. The quality of our merchandise is much better than factory compared with the material which came from the manually operated plating equipment, and is far superior to what we have ever shipped to our trade. They have made several comments to us complimenting us on the work.
We use less men in our plating department because of this automatic equipment.
We would very highly recommend this machine to any plater.
Yours very truly,
SANITARY - DASH MFG. CO. INC.
A. FRIEDMAN, GEN. MGR.

This Udylite Fully Automatic Machine turns out as high as 100 racks per hour, producing uniform finishes to laboratory exactness.

● Let Udylite Plating Machines and laboratory-tested supplies bring these important advantages to *your* operations! There is a Udylite machine for every need—small plant or mass-production line—small parts or large. Udylite will gladly analyze your operations, test your solutions, and advise you, entirely without obligation. Write *today*. The Udylite Corporation, 1651 East Grand Blvd., Detroit 11, Mich.

PIONEER OF A BETTER WAY IN PLATING . . .

THE Udylite CORPORATION

TESTED SOLUTIONS TAILORED EQUIPMENT AUTOMATIC CONTROL FOR METAL FINISHING

How are conditions in your plant?

As a help to executives who are concerned by the serious rise in occupational dermatoses, some of the principal causes and control measures are shown below.

FREQUENT EXPOSURE

to certain oils, minerals, chemicals, gases, etc., lays the groundwork for skin diseases by blocking the pores, robbing the skin of its natural oils, and creating other skin hazards.

POOR WASHROOM

facilities greatly aggravate the situation because hands *and forearms* cannot be thoroughly cleansed and dried. The skin often becomes cracked, opening the way for bacteria and fungi. Frequently infection results — meaning weeks lost from work, plus compensation and medical bills.

HEALTH AUTHORITIES AGREE

that cleanliness is by far the most important factor in the control of industrial dermatoses, and recommend as the first step: 1) Basins large enough to permit washing the hands *and arms* under running water. 2) Faucets or sprays in which *hot and cold water is mixed.* 3) Easily accessible dispensers with *safe, mild soap.* 4) Adequate supply of efficient individual paper towels.

Onliwon Towels are ideal for industrial washrooms — the most economical and efficient towel service available. Let them help you control occupational dermatoses in your plant.

A.P.W.

ONLIWON

WASHROOM SERVICE

TOWELS • TISSUE • SEAT COVERS

Industrial Division, Room 24
A.P.W. Products Company, Inc.
Albany 1, New York

Please send information concerning Onliwon Washroom Service and name of nearest Onliwon distributor.

Name.....
Position.....
Company.....
Street.....
City.....*State*.....

(*Continued from page* 188)

jects, sheds liquids, dirt and dust easily. The unusually large shaft is of SAE 1035 hot rolled steel. Oversize, double-shielded ball bearings are same size and interchangeable, permitting shaft extension from either side or both ends of motor as desired.

Polyphase, squirrel cage, induction motors are available in frames 203-326 with NEMA mounting dimensions.

Permamotors are furnished in aluminum hammer tone finish; different colors are available for special-purpose applications.

SOUND INSULATION OF WALLS AND FLOORS

A supplement No. 2 to National Bureau of Standards Building Materials and Structures Report BMS 17, *Sound Insulation of Wall and Floor Constructions,* has been prepared by Albert London of the Bureau staff. This report, with the two supplements, summarizes the data obtained in tests at the Bureau on the sound transmission of wall, partition, and floor panels.

As a result of heavier outside traffic, the increased use of electrical and mechanical equipment within buildings, and the modern tendency toward thinner walls and floors, there is a growing demand for better sound insulation. To aid in obtaining data for the design of buildings having a satisfactory resistance to sound transmission, the National Bureau of Standards constructed equipment to measure the sound insulation of various types of structures. In cooperation with building materials manufacturers, a large number of tests on constructions ranging from heavy masonry to glass and thin fiberboards have been made.

The present supplement, a 15-page pamphlet, contains the results of measurements on all constructions tested since the issuance of the original report in 1939 and the first supplement in 1940. In addition to data of this type, the original report also gives a general discussion of the factors which determine the transmission of sound through partitions.

BMS Report 17 and Supplements 1 and 2 may be obtained only from the Superintendent of Documents, Washington 25, D. C., at a cost per copy of 20 cents, 5 cents and 10 cents, respectively.

(*Please turn to page* 192)

CLASSIFIED SECTION PAGE 358

IF IT'S A FORGING

BILLINGS

OUR HAMMERS TALK PRODUCTION!... OUR FORGING ENGINEERS KNOW FORGINGS!...

WRITE OUR FORGINGS DIV. Dept SF-3
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FOLDED EDGE ELECTRICAL KRAFT

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PRECISION DIE CUTTING OF ELECTRICAL PAPER PARTS

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Your inquiries will receive our prompt attention.

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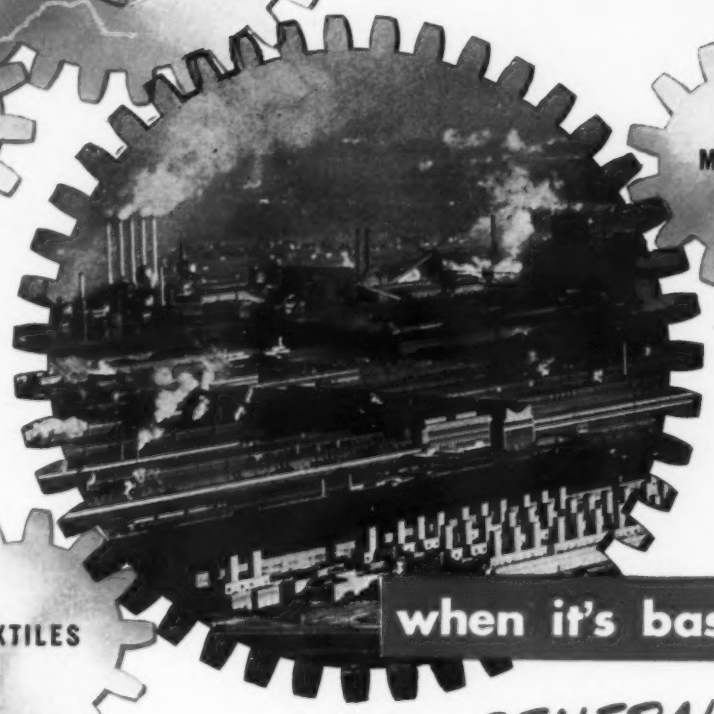
GEARED TO THE NEEDS OF INDUSTRY



CHEMICALS
PAPER
METALS
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LEATHER
TEXTILES
PETROLEUM
SOAP
GLASS & CERAMICS
DRUGS

when it's basic chemicals

... call on GENERAL CHEMICAL first!

General Chemical's Sales and Technical Service organizations work shoulder to shoulder with Industry . . . constantly alert to changing chemical demands in every field. Closely coordinated with them are General's progressive research program, and extensive—yet extremely adaptable—production facilities.

This way, General Chemical products are always geared to the needs of Industry . . . their grades and strengths meeting the most exacting requirements of the day. From such closely meshed efforts are coming General Chemical's new organic and inorganic chemicals for the process industries of tomorrow. The past stands proof that these, too, will be equally essential "Basic Chemicals for American Industry."

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

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BASIC CHEMICALS
FOR AMERICAN INDUSTRY

The Makers and Distributors of

CHAMPION

FLUORESCENT and *Incandescent*

LAMPS

For Every Industrial Service

Urge You to Make the Most of

PLANNED LIGHTING

For better products and increased production at lower overall cost *plan your lighting* before you buy lamps or fixtures.

CHAMPION helps you:

1. By supplying the finest quality, longest lasting lamps that forty-eight years of specialized experience in the manufacture of lamps for industry can produce.

2. By concentrating on low overhead and direct sale through qualified industrial suppliers to assure you minimum lamp and lighting cost.

3. By stationing trained lighting experts in industrial centers to furnish prompt, dependable recommendations on all lamp or lighting problems.

Let us mail you a copy of the Champion Maintenance Manual "H". It's full of useful hints on how to make the most of *planned lighting*.

CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO

BLOW-MOLDED BOTTLES FROM POLYETHYLENE

The accompanying illustrations are of especial interest for they illustrate various types of lightweight, non-breakable plastic bottles molded from Bakelite polyethylene by the Plax Corporation. These all-plastic bottles are the successful development of some ten years of research. The polyethylene readily lends itself to the production process which is a modification of glass blowing techniques, for it is easy to mold, light in weight, resistant to chemicals and oils, and produces a bottle that is flexible and practically unbreakable.

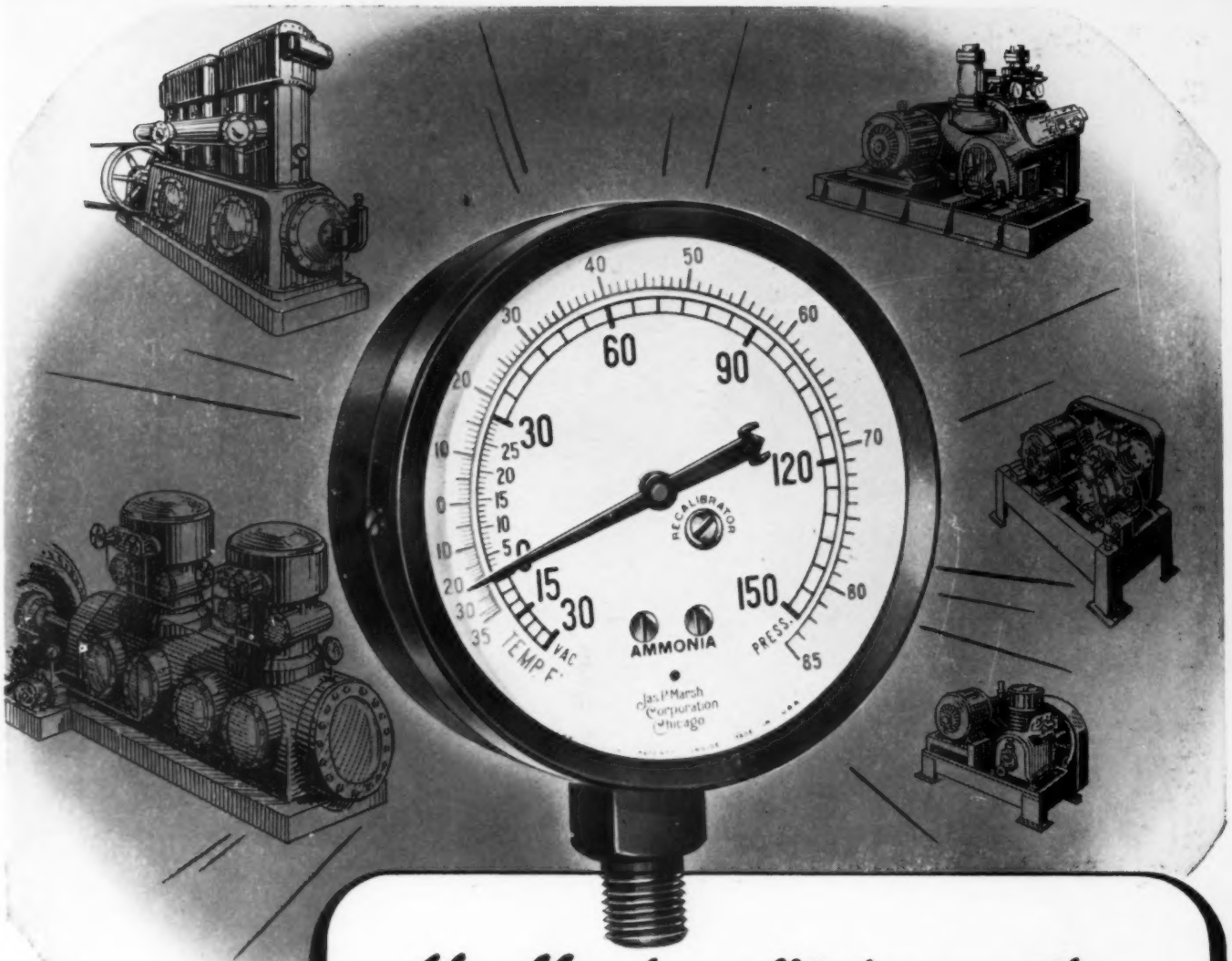
The Bakelite polyethylene hydrofluoric acid bottle combines maximum safety in transportation as well as convenience in handling.

One of the containers it will be noted is for hydrofluoric acid, a highly corrosive material that affects metals, clays and earths and glass. The polyethylene bottle combines maximum safety for the transportation and use of the acid, and convenience in handling the material in the laboratory. Polyethylene highly resists the action of the acid and offers protection

Men's toiletry line packaged in Bakelite polyethylene blow-molded containers. The dark caps are molded of Bakelite phenolic.

to it for long periods of storage. The special pouring spout, also of polyethylene permits a full spout flow from the bottle, or merely a drop or two at a time, depending on the need. A "siphon action" draws back into the bottle any drops which may cling to the spout. Being clear, the bottle allows the user to note the extent of his supply.

(*Please turn to page* 200)



Yes, Marsh quality has won the REFRIGERATION *field, too—*

If you know Marsh quality, it won't surprise you to find that Marsh Pressure Gauges are preeminent in the refrigeration industry. The current census clearly shows that more manufacturers of refrigeration compressors equip their units with Marsh Gauges than any other make. And numbered among these users are the big names in this exacting industry where precision and stamina are a mandate.

You could ask for no higher testimonial to Marsh quality than this, yet Marsh Gauges have written a similar story into the records of every industry where pressure gauges are used. In the applications where the going is toughest — where the needs are most critical — Marsh is the gauge chosen by the most discriminative manufacturers to become a vital part of their equipment.*

Keep this in mind when you select pressure gauges—or equipment requiring gauges. Insist on the instrument that has proved first choice of industry for the most critical services.

Jas. P. Marsh products include: A full line and range of gauges in pressure, compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. *Ask for literature.*

JAS. P. MARSH CORP., DEPT. G, SKOKIE, ILLINOIS

Export Dept.: 155 E. 44th St., New York 17, N. Y.

MARSH GAUGES

"THE STANDARD OF ACCURACY"

MARSH ALONE HAS THE "RECALIBRATOR"

. . . quickest and best way to correct a gauge that has been knocked out of adjustment by improper handling.

*One of a series of advertisements citing examples of this.

WHEN YOU BUY BUFFS . . .

Count your COST per Buffing Wheel

THE COST OF A BUFFING WHEEL should be determined by the diameter of the wheel . . . the number of sections needed to make any given face measurement . . . the quality of material in its construction and the hours per wheel life . . . **NOT** merely by the initial cost per section.

You can SAVE 50%

with JACKSON AIRWAY Ventilated BUFFS

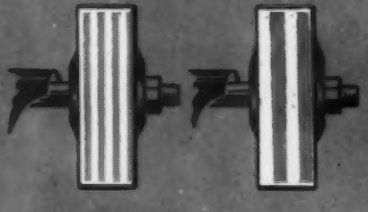
Constructed of special sheeting scientifically designed and produced by the largest textile mill in America . . . incorporating the exclusive **Jackson Airway Ventilation** in their manufacture . . . these buffs are truly the best money can buy. That is why they wear twice as long . . . eliminate burning . . . buff more work per wheel life . . . require no raking and save compounds.

FOR EXAMPLE: Why spend $10,000 a year for ordinary buffs when $5,000 will do the job if you use **Jackson Airway Ventilated Buffs.** Conclusive proof that we **SAVE YOU 50%** is yours for the asking — write, wire or phone, today!

CHECK THESE JACKSON AIRWAY VENTILATED BUFF FEATURES:

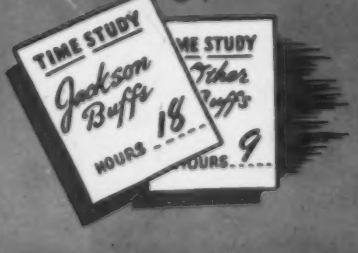
NO BURNING

Jackson patented construction incorporates full ventilation permitting air to cool the buff internally.



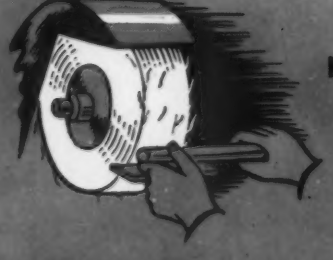
HALF AS MANY SECTIONS

Because these buffs are twice as wide as ordinary buffs, you buy half as many sections per wheel.



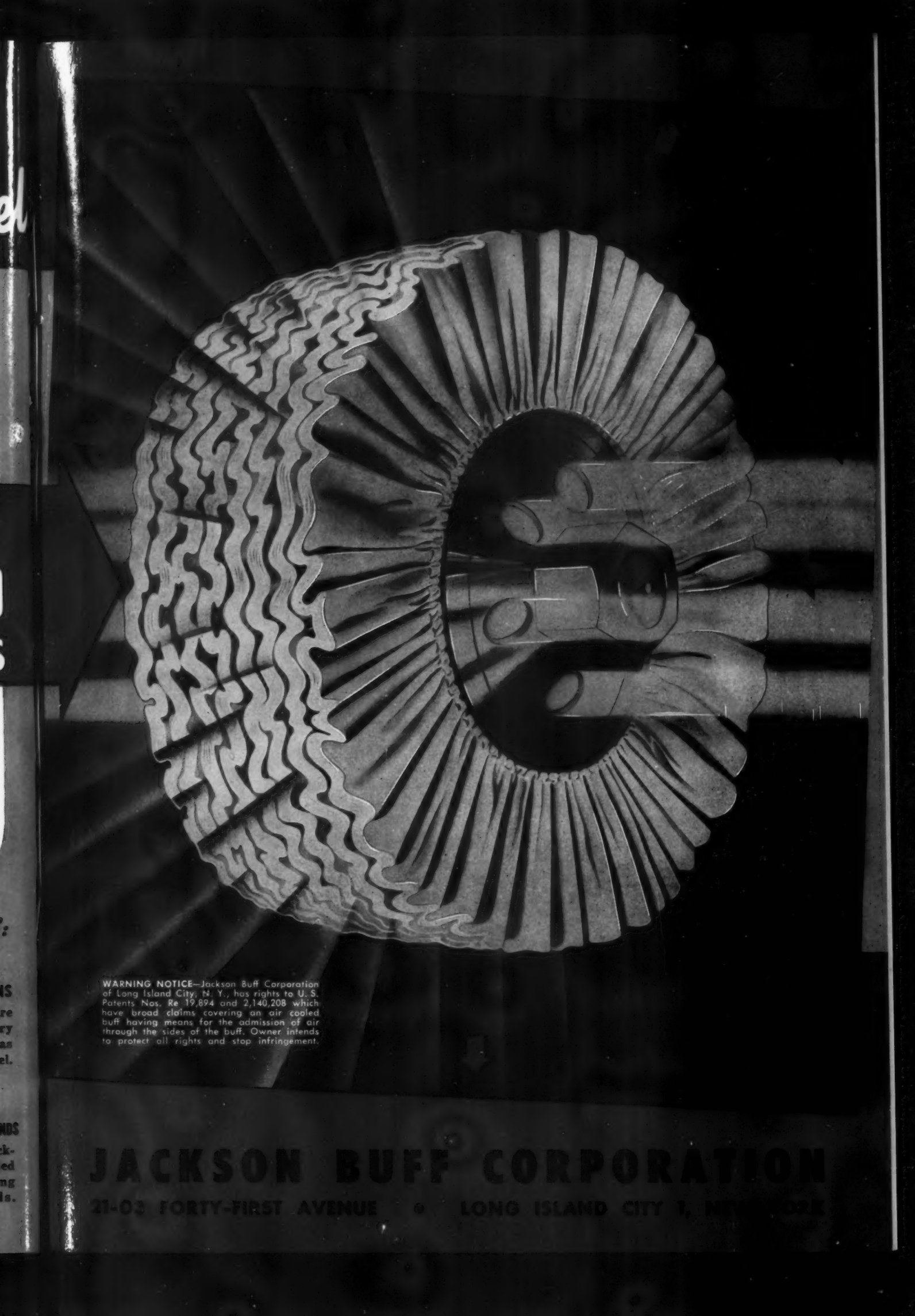
WEAR TWICE AS LONG

Time studies are offered as conclusive proof that they wear twice as long as conventional buffs.



NO RAVELING, SAVES COMPOUNDS

Bias construction of Jackson Airway Ventilated Buffs eliminates raveling and saves compounds.


WARNING NOTICE—Jackson Buff Corporation of Long Island City, N. Y., has rights to U. S. Patents Nos. Re 19,894 and 2,140,208 which have broad claims covering an air cooled buff having means for the admission of air through the sides of the buff. Owner intends to protect all rights and stop infringement.
JACKSON BUFF CORPORATION
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Every progressive business stresses good buying — the knack of getting the best ultimate dollar values from purchases.

SUPERSTRONG boxes and crates— "Bound with Steel" — are designed for good buying as well as for strength. They bring you substantial reductions in shipping weight, shipping space, storage space, assembly time, damage claims — all adding up to lowered shipping costs.

Good buyers will find it profitable to discuss their long range requirements with our shipping experts.

SHIPPING SUPERSTRONG CONTAINERS

RATHBORNE, HAIR AND RIDGWAY COMPANY

1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

The signing of the Declaration of Independence of the United States of America. July 4. 1776.

Good Judgement PAYS OFF!

Yes, good judgement paid dividends then . . . it will pay *you* dividends *now* when you select Bay State wheels for your grinding needs. This "good judgement" selection will give you consistently higher performance in countless everyday grinding jobs.

Here's why BAY STATE INTERNAL WHEELS are so widely used throughout industry today:

1. Take heavy, fast cuts.
2. Have exceptionally long life.
3. Are uniform in size and grinding action.
4. Are accurately centered . . . arbor holes parallel to face.
5. Afford consistent duplication, assuring uniform results.
6. Feature Bay State's exclusive fractional grades . . . three degrees of hardness in a single normal grade.

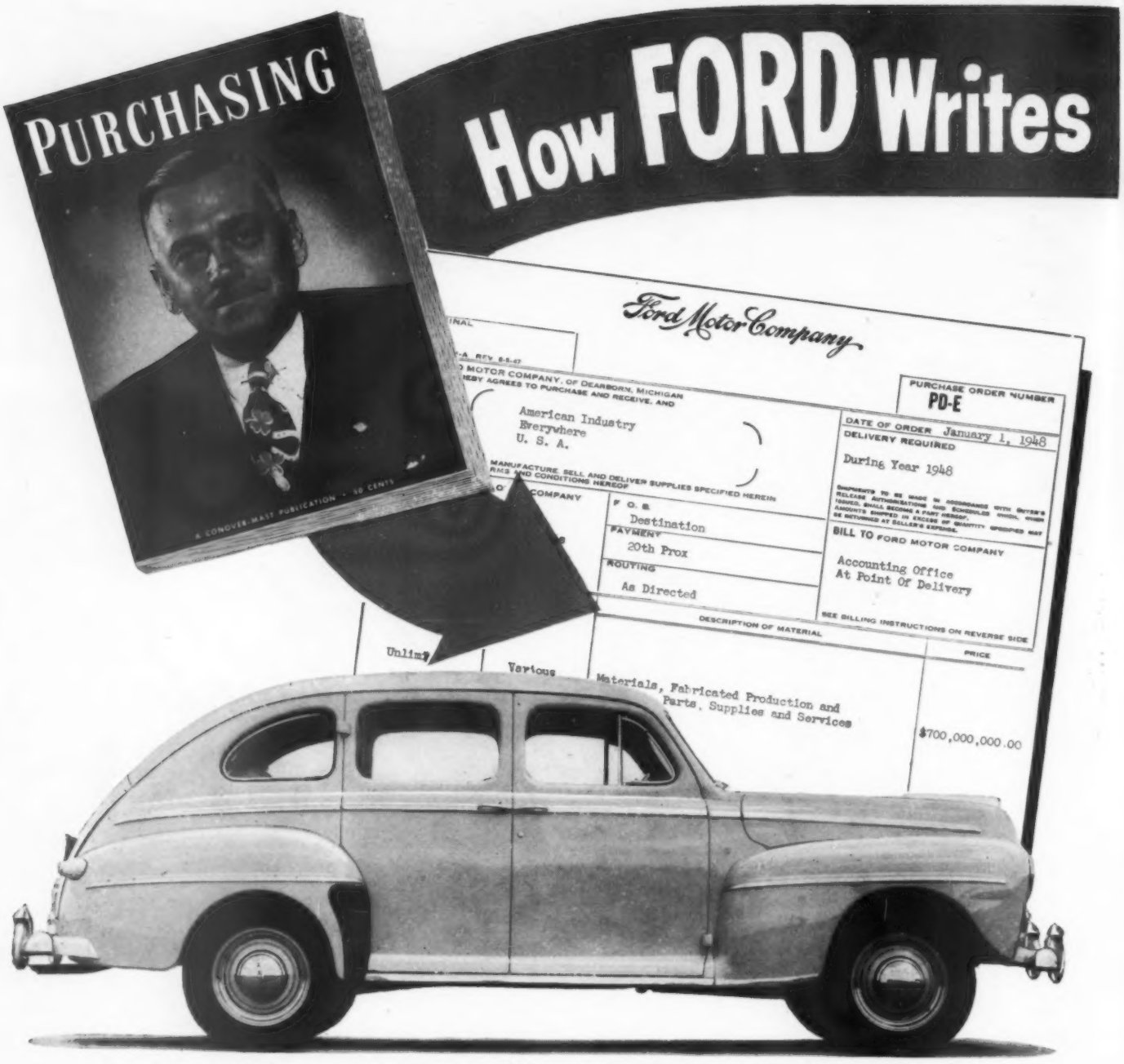
You will find Bay State's Operational and Specifications folder of real value. Write for it today.

Branch offices & warehouses Chicago — Detroit
Distributors — All principal cities

BAY STATE®

Top Performance Consistently Duplicated

BAY STATE ABRASIVE PRODUCTS CO., WESTBORO, MASSACHUSETTS, U. S. A.



High Interest Facts About FORD'S Purchasing—

The Company has changed as much as the Car! Ford's purchasing policies reflect it. Last Christmas suppliers received a remembrance from Ford. Buyers at Ford have expense accounts these days. They visit suppliers' plants to obtain a better understanding of problems. Buyers do not order unless the supplier can make a fair profit. Often Ford experts help a supplier cut costs so he can meet price requirements and also make a profit.

58 PERCENT *of the cost of a car is purchased in finished parts.*

$10,000 *is saved by the reduction of only 1 cent in the cost of just one of the 10,000 parts that go into a car.*

700 PEOPLE *make up the Ford purchasing organization. There are 130,000 people working for Ford.*

250 SALESMEN *call on Ford in an average day.*

7200 SUPPLIERS *benefit from Ford business.*

More than 1,000,000 cars will be produced by Ford in 1948.

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES

a $700,000,000 order to Industry

Business Paper Scoop of '48 —The Year's Best Space Buy

THE EDITORS of *Purchasing* will present in June a 200-page editorial feature that will stand as one of the truly great achievements in business paper publishing.

In this issue, for the first time, the Ford Motor Company releases *all the facts* about its progressive purchasing operation, notable not only for its size, but also as a dramatic example of the advanced policies and methods which industry employs in today's buying.

Because Ford's policies are basic, not dependent on size, the smallest plant will benefit from the detailed story of how Ford specifies, selects and orders materials, parts, supplies, services, and, the why-and-how of Ford's buying policies, routines and facilities.

Never before has a company like Ford disclosed so much inside information about its workings. More than 60 Ford purchasing executives contributed to this unusual editorial project.

ASK TO SEE the prospectus. A quick survey of the contents will remove any doubt that this represents the top business paper editorial scoop of 1948 . . . or any year. The June issue of *Purchasing* holds so much of value for so many executives of businesses, large or small, that your advertising in it will have multiplied power and life.

It Will Be a BOOK OF THE YEAR To . . .

PURCHASING AGENTS—This will be "must" reading for every P. A. and buyer . . . a *textbook* loaded with helpful, stimulating ideas, and details on methods. Says G. A. Renard, Secretary, National Association of Purchasing Agents:—"My preview of your Ford issue shows that Ford principles and procedures could be applied to any size or type manufacturing organization . . . will be top reference work on profitable application of sound purchasing fundamentals."

PRESIDENTS, OFFICIALS—Top level men will look for, and find, valuable ideas in Ford's policy that places Purchasing on a level with Engineering, Production and Sales.

SALES EXECUTIVES—Will make this issue a guidebook to successful selling through today's industrial purchasing department. They will get extra copies for salesmen.

FACTS ON EXTRA COVERAGE—Add to regular P. A. subscribers representing 85% of industrial purchases a plus of special copies to all key buyers in Ford and the Auto industry . . . and P. A.'s among suppliers to Ford.

Thousands of Presidents and Sales Managers throughout industry will receive a mail description of the June issue with an invitation to order copies for study. Hundreds will respond.

PURCHASING

ORDERS FOR SPECIAL COPIES—Non-subscribers not on the June distribution list must order a copy before June 1, at $2. for single copy. Five or more at $1.50 each. Send orders to PURCHASING, 205 East 42nd Street, New York 17, N. Y., Offices in Chicago, Cleveland, Los Angeles.

A CONOVER-MAST PUBLICATION

TIME PROVES

Galvanized (ZINC-COATED) Sheets Stay Stronger Longer

34 YEARS . . . Erected in 1913, and covered with heavy-gauge galvanized sheets, this Tennessee concentrating plant of the A/Z Company, is still in excellent condition after *more than 3 decades of service.* Painted with Gray Metallic Zinc Paint in 1932.

In building for the future, look to the past for proof of a building material's strength . . . durability . . . service. With galvanized (zinc-coated) roofing and siding, you get the strength of steel . . . the rust protection of Zinc. So for low-cost, long-time service, choose the building material that's proved by TIME itself . . . galvanized sheets. Send coupon for information about Zinc and how it can help keep your buildings and equipment stronger longer.

ZINC INSTITUTE 2 OZ. COATING SEAL OF QUALITY

This "Seal of Quality" is your guide to economy in buying galvanized sheets. It means they carry at least 2 oz. of Zinc per sq. ft.

AMERICAN ZINC INSTITUTE

Room 2611 • 35 E. Wacker Dr. Chicago 1, Ill.

FREE BOOKLETS!

Send me without cost or obligation the illustrated booklets I have checked.

- ☐ Repair Manual on Galvanized Roofing and Siding
- ☐ Facts about Galvanized Sheets
- ☐ Use of Metallic Zinc Paint to Protect Metal Surfaces

Name_____

Address_____

Town_____ State_____

(*Continued from page* 192)

The other two illustrations are of plastic containers developed for toiletries — a toiletry line for men, and a squeeze-spray deodorant package, also molded by the Plax Corporation. Considerable engineering went into the design of the deodorant bottle with stress laid on the proper application of the plastic parts. It was necessary to determine the most desirable shape for ease in finger squeezing, but with a center of gravity that would maintain the bottle in an upright position. It was necessary to have the proper wall thickness—heavy enough for fast recovery yet thin enough so that pressure on the bottle will force the deodorant through the nozzle. The polyethylene met the requirements of flexibility and also necessary resistance to the slight acidity of the deodorant.

Squeezing this lightweight polyethylene container forces deodorant through a built-in nozzle in a fine spray.

* * *

PLASTICS SEALING SLEEVES USED TO INSULATE MAGNETIC COILS

A new method of insulating magnetic coils with plastics sealing sleeves to form a tough, tight fitting insulation has been announced by General Electric's Chemical Department, Pittsfield, Mass. The new process, which permits the covering of all inner and outer surfaces in one operation, is accomplished by slipping a sealing sleeve inside the magnetic coil, turning the two ends over the outside and permitting the sleeve to air dry. Use of the sealing sleeves as an insulation enables many coils to be wound as one piece on long mandrels and cut to desired size.

General Electric stated that the sealing sleeves are also finding use as coverings for cable ends, grips for pliers, wrenches and wire cutters, and as temporary protective covers for the storage and shipment of finished products.

Processing the plastics sleeves calls for a special dilator solution developed by General Electric in which the material is immersed from two to four hours. When expanded to half again its normal size the sleeve is placed in position. As it dries it shrinks to smaller than its original size forming a tight fit around the product.

(*Please turn to page* 202)

5 metals to choose from

When you specify

Titeflex

Flexible Tubing

Brass Bronze
Monel Inconel
Stainless Steel

You name the operating conditions —TITEFLEX has a flexible tubing which will exactly meet your requirements. TITEFLEX all-metal construction assures you of years of efficient service on the toughest applications. Write for literature.

Titeflex, Inc. 533 Frelinghuysen Ave., Newark 5, N. J.

Exclusive Manufacturers of Titeflex high quality products for more than 30 years

Sales Offices: CHICAGO CLEVELAND DETROIT PHILADELPHIA LOS ANGELES BOSTON SAN FRANCISCO TORONTO

ARMSTRONG

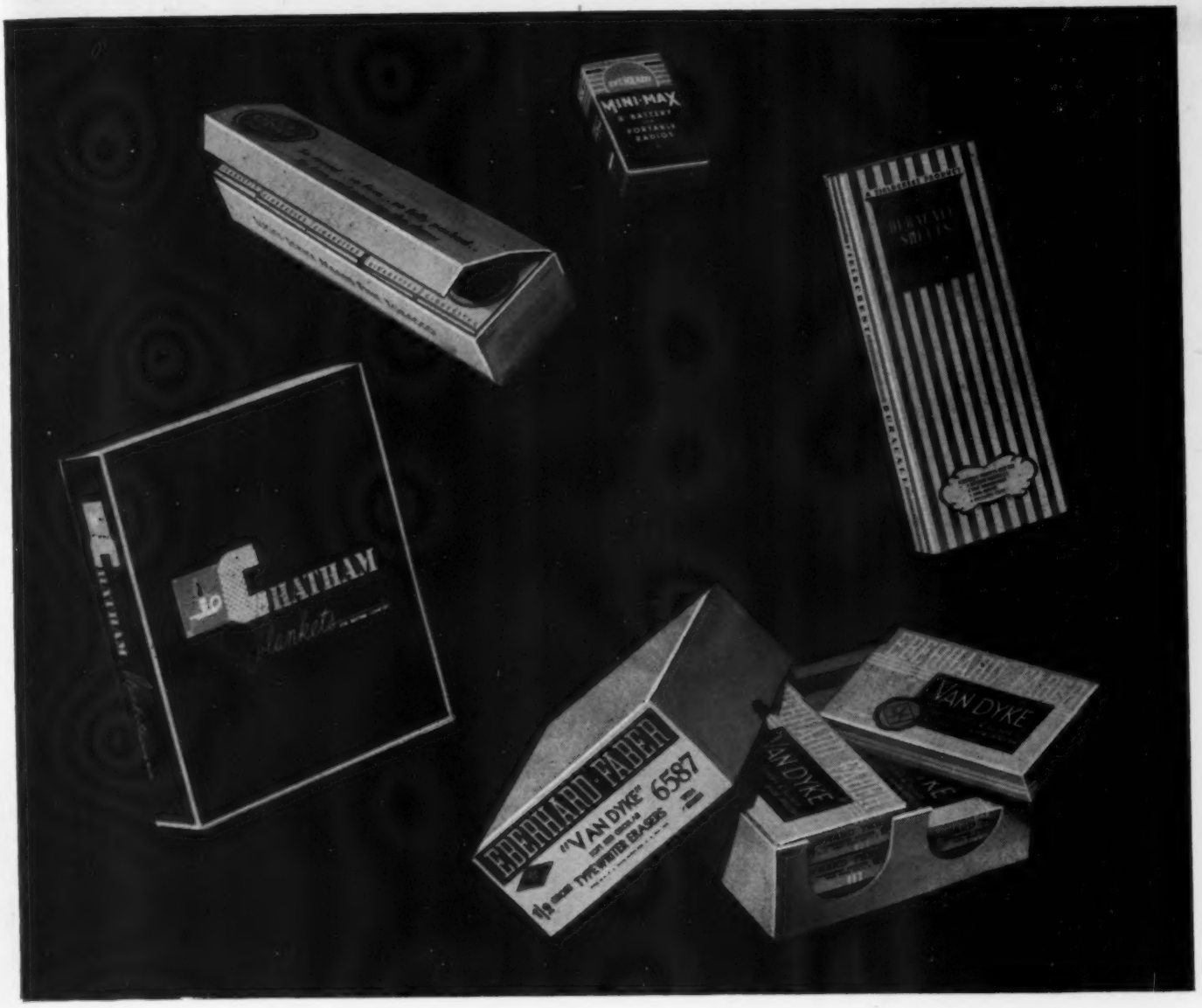
Drop Forged **EYE BOLTS**

They'll Carry the Load

Specify ARMSTRONG Drop Forged Eye Bolts for extra strength — correctly engineered proportions, forged-in quality, uniformity of design in all sizes and the best mild steel, heat treated to increase tensile strength. Built to tool standards, not hammered out as "tonnage" forgings, "they always carry their load safely."

Stocked by Armstrong distributors with or without shoulders, threaded or as blanks in 13 sizes (openings from ¼" to 4" i.d.)

ARMSTRONG BROS. TOOL CO.
5203 W. Armstrong Ave.
Chicago 30, U. S. A.
New York San Francisco



LEADERS' CHOICE for BETTER PACKAGING

Yes, leading manufacturers in almost every branch of our great American economic system choose Old Dominion for their packaging service. For whatever the product may be — textiles, furniture, food, machine tools, cosmetics, candy or shoes — Old Dominion offers a superior package for every job.

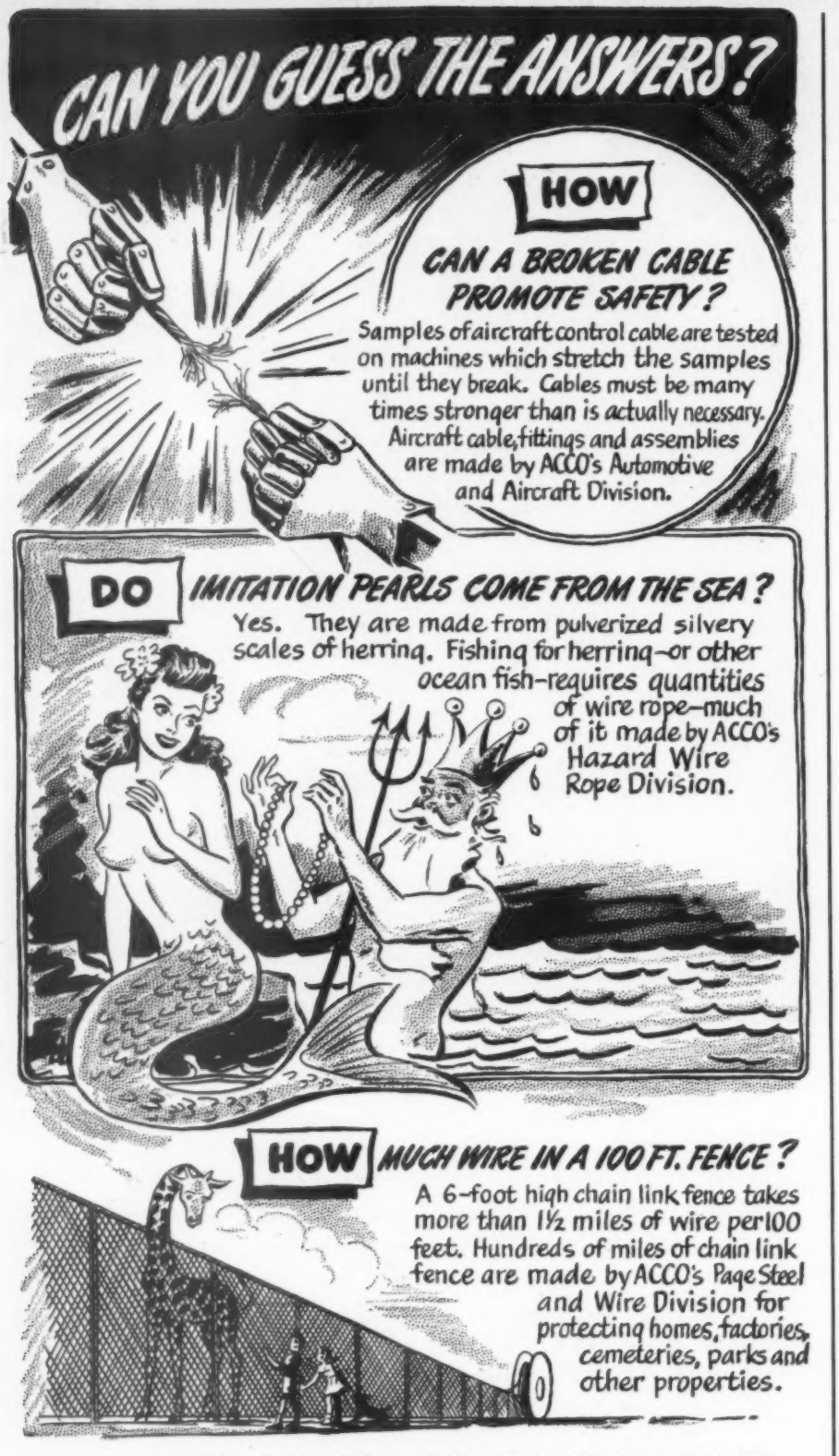
Consult Old Dominion today about your packaging plans. Their experts will be pleased to assist you in set-up, corrugated, canister, folding and acetate types of containers. Send for General Line Folder #93.

OLD DOMINION *Box Company Inc.*

PLANTS LOCATED THROUGHOUT THE SOUTH

CHARLOTTE, N. CAROLINA

THE SOUTHERN BOX MAKER WITH A NATIONAL REPUTATION


CAN YOU GUESS THE ANSWERS?
HOW
CAN A BROKEN CABLE PROMOTE SAFETY?
Samples of aircraft control cable are tested on machines which stretch the samples until they break. Cables must be many times stronger than is actually necessary. Aircraft cable, fittings and assemblies are made by ACCO's Automotive and Aircraft Division.
DO IMITATION PEARLS COME FROM THE SEA?
Yes. They are made from pulverized silvery scales of herring. Fishing for herring—or other ocean fish—requires quantities of wire rope—much of it made by ACCO's Hazard Wire Rope Division.
HOW MUCH WIRE IN A 100 FT. FENCE?
A 6-foot high chain link fence takes more than 1½ miles of wire per 100 feet. Hundreds of miles of chain link fence are made by ACCO's Page Steel and Wire Division for protecting homes, factories, cemeteries, parks and other properties.

ACCO Products Include: AMERICAN Chain • TRU-LAY and LAY-SET Preformed Wire Rope • TRU-LAY Cable and TRU-LOC Swaged Terminals for Aircraft • PAGE Wire, Chain Link Fence and Welding Rods • CAMPBELL Abrasive Cutters • READING-PRATT & CADY Valves and Fittings • PENNSYLVANIA Lawn Mowers • MARYLAND Bolts & Nuts • "ROCKWELL" Hardness Testers • WRIGHT and FORD Hoists • HELICOID Pressure Gages • MANLEY Automotive Service Equipment.

ACCO

AMERICAN CHAIN & CABLE BRIDGEPORT CONNECTICUT

NEW HANDBOOK FOR METAL WORKING INDUSTRY

The latest work to be added to the small but growing list of urgently needed books on machining is the new Handbook for Horizontal Boring, Drilling and Milling Machines published by the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

In the 266 pages comprising this work more than 325 illustrations, drawings, charts, diagrams and tables aid the reader to visualize the practical information presented. Large clear type is used throughout the book, and a sturdy loose-leaf binder has been adopted to permit keeping the Handbook perpetually current.

An entire section of the book has been set aside for "Outstanding Applications," for insertion of information on the latest machining techniques as they are developed. Such important subjects as Diesel Engine Machining, Locomotive Cylinder Machining, Traction Motor Machining and others will be written and regularly furnished each book owner without charge, in conformance to the book's general format. The book is completely free of company references and machine merit claims. Descriptive information is based primarily upon horizontal boring machine procedures, though many of the machining concepts described may be equally applicable to other metal working tools.

Thirty chapters are arranged in three convenient sections, namely, Machine Fundamentals, Basic Operations, and Work Methods. Each chapter presents a comprehensive story about a specific subject.

The price of the Handbook is $5.00. Copies are available from Information Service Dept., Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

NEW ROLLER BEARING LUBRICANT FOR RAILROAD EQUIPMENT

An entirely new type of roller bearing lubricant has been developed by the Texas Company, 135 E. 42nd St., New York, for use on locomotive, passenger and freight car journals. It is designed to replace the liquid oils which not only have proved expensive in themselves but boosted maintenance and inspection costs.

The new product will increase time between periodical inspections, and will elimi-

(*Please turn to page* 204)

Only PHILLIPS

RECESSED HEAD SCREWS

have driver sizes engineered in balance with ALL screw sizes for PRACTICAL PRODUCTION DRIVING

Phillips Practical Engineering, based on exhaustive tests of actual driver requirements on the assembly job, proved 4 sizes of recesses and drivers the fewest possible for dependable efficiency in driving the complete range of sizes of cross recessed head screws.

One Driver Size is adequate for most jobs, however, because the great majority of production assemblies use screws in the Phillips No. 2 recess and driver size range.

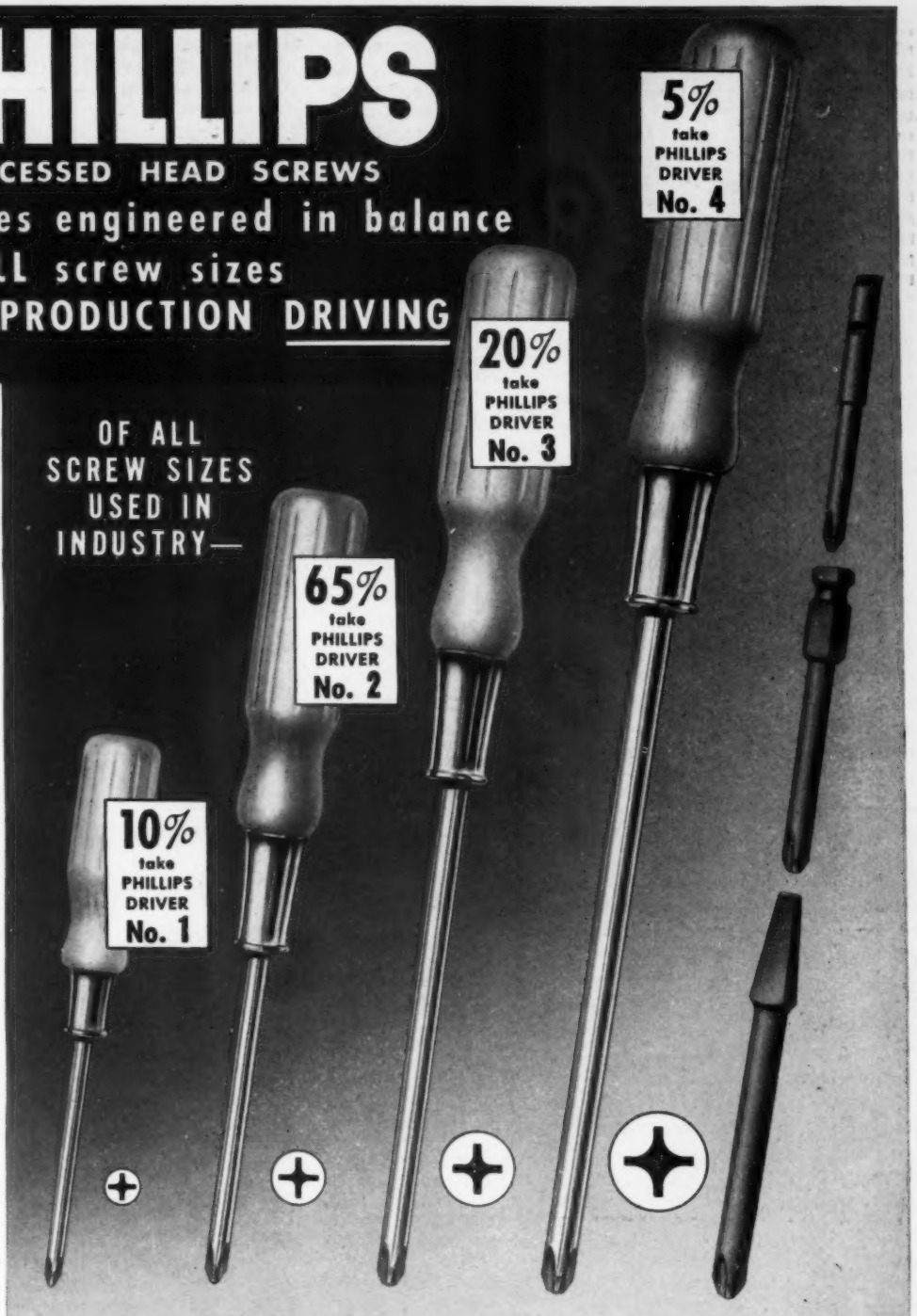
About 25% of Screws used in production assemblies are bigger than those in the popular No. 2 size range. 20% have Phillips No. 3 size recess, and the proper balance essential to efficient driving is provided by the Phillips No. 3 size driver.

For the Few Heavy Duty screws used, (5%), you need a driver and recess size balanced to obtain the required torque and fastening security, — Phillips No. 4. Using a driver suited to smaller screws is like using a tack hammer on a railroad spike.

For Small Size Screws, you want a small driver (No. 1) in proper *balance* to prevent overdriving, stripping threads, or straining screw head. You wouldn't use a driver big enough to drive a ½" diameter screw, any more than you'd use a sledge hammer to drive a tack.

Phillips Screws not only promise, but *deliver* all the advantages of cross recessed head screws. Ask for Phillips when you order.

OF ALL SCREW SIZES USED IN INDUSTRY—



DRIVERS AND BITS SHOWN HALF SIZE — RECESSES ACTUAL SIZE

THE PHILLIPS DRIVER AND SCREW are in perfect balance, whatever the size. Less than 4 recess and driver sizes would have meant weakened heads in some screw sizes — would have encouraged overdriving to weaken the screw, or underdriving to lessen assembly strength.

By varying the length and diameter, the same balance is assured in bits for hand brace, spiral, and power driving.

GET THIS HELPFUL BOOKLET

Phillips Screw Mfrs., c/o Horton-Noyes Co.
1800 Industrial Trust Bldg., Providence, R. I.

Send me the new booklet—"How to Select Recessed Head Screws for Practical Production Driving".

Name .....

Company .....

Address .....

.....

PHILLIPS Recessed Head SCREWS

Wood Screws • Machine Screws • Self-tapping Screws • Stove Bolts

25 SOURCES

American Screw Co.
Central Screw Co.
Continental Screw Co.
Corbin Screw Div. of American Hdwe. Corp.
Elco Tool & Screw Corp.
The H. M. Harper Co.
Lamson & Sessions Co.
Milford Rivet and Machine Co.
National Lock Co.
National Screw & Mfg. Co.
New England Screw Co.
Parker-Kalon Corporation
Pawtucket Screw Co.
Pheoll Manufacturing Co.
Reading Screw Co.
Russell Burdsall & Ward Bolt & Nut Co.
Scovill Manufacturing Co.
Seaboard Screw Corp.
Shakeproof Inc.
The Southington Hardware Mfg. Co.
The Steel Company of Canada, Ltd.
Sterling Bolt Co.
Stronghold Screw Products, Inc.
Wales-Beech Corp.
Wolverine Bolt Company

P28

CULLMAN *Stock Design* SPROCKETS

will do the job—Better!

With many types to select from—you are almost certain to find just the size you need for practically every transmission requirement—*ready for immediate delivery*. Cullman Sprockets—produced by fast, low-cost, high-precision methods—assure top operating efficiency. "Specials," too, *are quickly available*—made up by exclusive Cullman methods and specialized equipment.

Write today for free catalog containing useful data and helpful facts for sprocket users. It lists dimensions.

CULLMAN WHEEL COMPANY
1352 P Altgeld Street — Chicago 14, Illinois

Floodlight a 100-Ft. Area

Coleman FLOODLIGHT LANTERN

A brilliant work and trouble light for industry and business! 20 times as bright as an ordinary wick-type kerosene lantern. Safe, too—won't spill fuel even when tipped over, can't be filled when lighted. Stormproof—a 105-mile gale can't put it out. Low-cost operation—40 hours' service on a gallon of fuel—makes and burns its own gas from any good grade of clean, untreated gasoline. See a Coleman dealer—ask for a demonstration.

Fast-Action Portable Heat

Coleman HANDY GAS PLANT

Fills dozens of needs around the plant and on location—instant-lighting; quick, clean heat for warmth or cooking. Makes and burns its own gas from gasoline. Costs only a few cents a day to use. See your dealer, give it a try-out!

THE COLEMAN COMPANY, Inc.
WICHITA 1, KANSAS

WORLD'S LARGEST MAKERS OF GAS PRESSURE APPLIANCES

THE COLEMAN CO., INC., DEPT. 167-Q2
WICHITA 1, KANSAS
Send us more information about the Floodlight Lantern and Handy Gas Plant—no obligation.

NAME_____

ADDRESS_____

(*Continued from page 202*)

nate necessity of station platform journal inspections on passenger equipment and intermediate terminal yard inspection of freight car journals and boxes. It is believed that the new lubricant can remain in service for two years or more before repacking becomes necessary.

The new development will eliminate lubricant leakage and will form a seal against water, dirt, and wheel and brake shoe dust. It is water resistant and will not wash out. It withstands extreme heat and retains its lubricating powers in all kinds of weather. The grease has undergone months of rigid testing in laboratories and in the field and has proved satisfactory. It is now being tested in fast continental passenger and freight equipment.

NEW TRUCK LOADING METHOD

Illustration shows new method of truck loading that is said to reduce loading time two-thirds, developed by Hall, Haas & Vessey, Ltd., 734 So. Central Ave., Los Angeles, Calif. The truck is run onto an eight-ton lift set in the loading zone and lowered until the back floor of the truck is level with the ground. Shipments are then rolled onto or off the truck as simply as if they were being transferred from one end of the loading zone to the other.

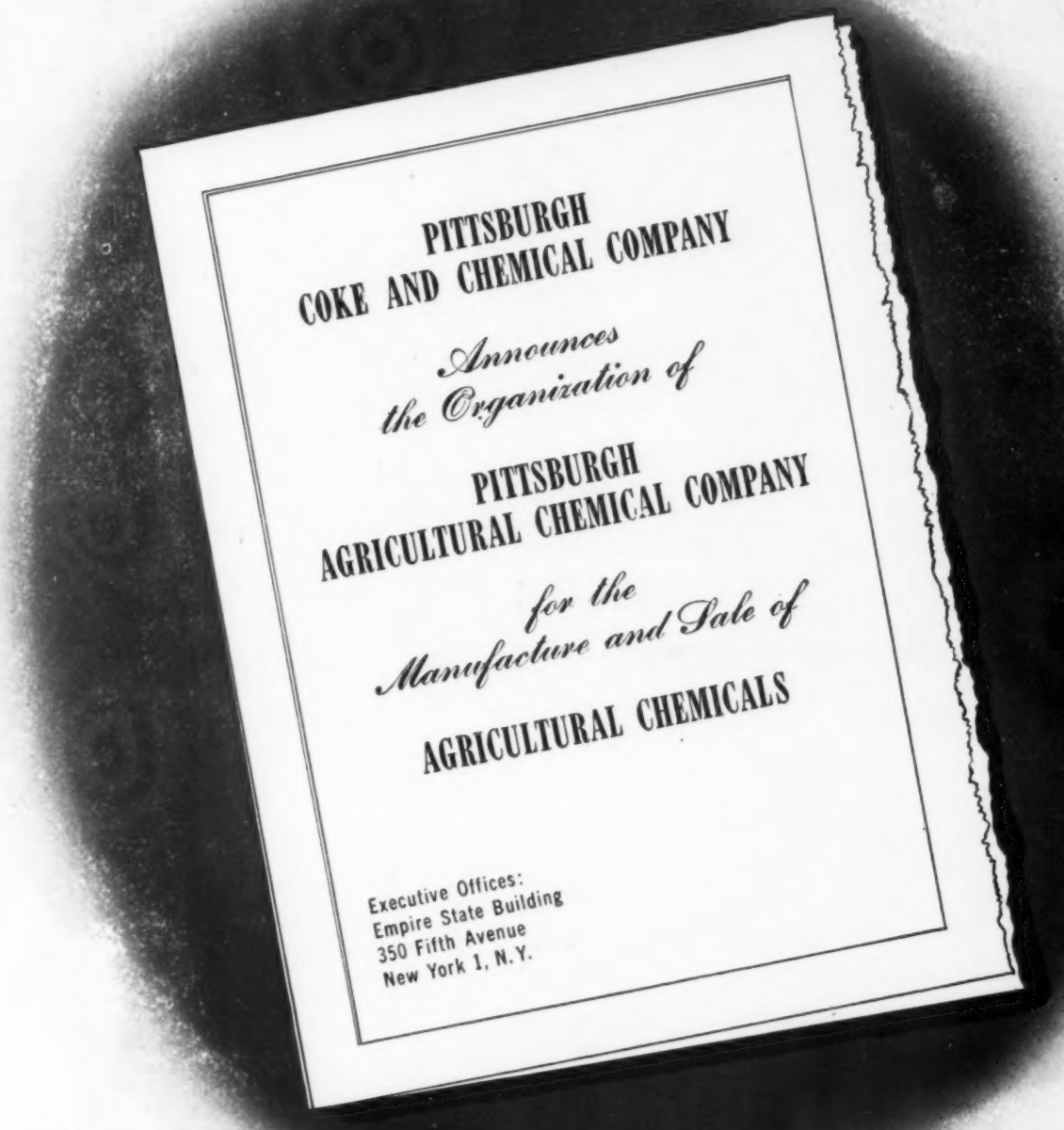
Truck floor is level with loading area

MOISTURE DETERMINATION BY ELECTROLYTIC FILM

An improved method for measuring small amounts of water vapor in gases has been developed by E. R. Weaver of the National Bureau of Standards, Washington, D. C. The procedure, which may also be extended to the determination of the moisture content of certain liquids and solids, depends essentially on the change in electrical resistance of an electrolytic film as it absorbs water vapor. Such a method has the advantage of speed, simplicity, high sensitivity, and wide range. It is very flexible in operation and is readily adapted to numerous applications, such as measuring the moisture-permeability of membranes, detecting minute concentrations of combustible gas in air or of oxygen in combustible gas, determining water vapor in aviators' oxygen or in liquid carbon dioxide, measuring the capacity of drying agents, determining the water content of organic liquids and solutions, and measuring the relative humidity in small or comparatively inaccessible spaces under rapidly changing conditions.

(*Please turn to page 206*)

NOW... AGRICULTURAL CHEMICALS
from a basic producer



This affiliation makes available for the first time a source of synthetic organic agricultural chemicals in form suitable for application . . . produced by one manufacturer and controlled in each stage of processing from the lump of coal to the ready-to-package product.

For many years a producer of coal-chemicals, Pittsburgh Coke and Chemical Company has more recently been converting these basic organic materials into a number of the new chemicals which are rapidly supplanting inorganic chemicals and boramicals in agriculture. To this manufacturing source the affiliation of Pittsburgh Agricultural Chemical Company adds plant pathologists, entomologists, agronomists and chemists trained in the researching, formulation and marketing of agricultural chemicals. A wide variety of insecticides, fungicides, rodenticides and germicides will result . . . all manufactured, formulated, tested and shipped from the Neville Island plant.

Your inquiries are invited. Please address them to the New York office of

PITTSBURGH AGRICULTURAL CHEMICAL COMPANY
Empire State Building · 350 Fifth Avenue · New York 1, New York

Affiliated with

PITTSBURGH COKE & CHEMICAL COMPANY
Grant Building · Pittsburgh 19, Pa.

COAL CHEMICALS · ACTIVATED CARBON · NEVILLE COKE · EMERALD COAL · PIG IRON · GREEN BAG CEMENT · CONCRETE PIPE AND CONCRETE PRODUCTS · LIMESTONE PRODUCTS

Can You Name it?*

Another name might be the
PRODUCTION CASTING OF THE MONTH

SUPERIOR FOUNDRY OF CLEVELAND, OHIO

will show you monthly an outstanding example of production castings...

that our modern and completely staffed and equipped Foundry turns out regularly for satisfied customers. They know that it saves them time, money, and production headaches to always bring their casting problems to

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3542 EAST 71st STREET • CLEVELAND 5, OHIO

MICHIGAN 3078

*This is almost too easy for you Casting Experts. But, for those in doubt, it's a Valve Body. This gray iron casting is uniformly sound to withstand high pressures.

SULPHURIC RESISTANT STAINLESS IN WROUGHT FORMS

The development of new manufacturing methods has made possible the production of what is termed a "super corrosion-resistant" stainless steel, available in the forms of bar stock, wire, strip, tubing and pipe. Until the present, this stainless steel was available only in cast form known as Durimet 20, manufactured by Duiron Co., Inc., Dayton, Ohio.

Development of the new processes for manufacturing the material in the new forms is announced by The Carpenter Steel Co., Reading, Pa. They will be manufactured by The Carpenter company through an exclusive licensing arrangement with The Duriron Company, and known as Carpenter Stainless No. 20.

In addition to the superior corrosion resistance provided by the alloy, it retains the good mechanical properties of the 18-8 stainless steels. And because of its excellent resistance to the corrosive effects of sulphuric acid, as well as many other substances, it can be used in the manufacture of heavy chemicals, organic chemicals, synthetic rubber, high octane gasoline, solvents, explosives, plastics and pharmaceuticals.

The outstanding feature of Carpenter Stainless 20 is its excellent resistance to hot sulphuric acid, permitting its use in 60° Be. (78%) sulphuric acid solutions at temperatures of about 125° F. Likewise it is satisfactory in 65% and 93% sulphuric acid solutions. It is especially resistant to nitric-sulphuric acid mixtures.

Forms Available

The Carpenter Steel Company produces centerless ground round bars which are shipped direct from mill stocks. Other forms available include: hot rolled, and cold drawn bars and wire in rounds, rectangles, squares and hexagons; hot and cold rolled strip up to 8" in width, and .010" to .140" thick. The material in the form of tubing is produced in sizes from ⅜" to 2⅜" O.D., and standard pipe sizes up to 2", by Alloy Tube Division of The Carpenter Steel Company, Union, New Jersey. Weld rod and fittings are available from various manufacturers.

Very satisfactory hot rolled 36" x 96" x .050" minimum thickness sheets have been produced experimentally, and it is hoped that they will be produced commercially in the near future. Experiments with plate manufacture are in progress.

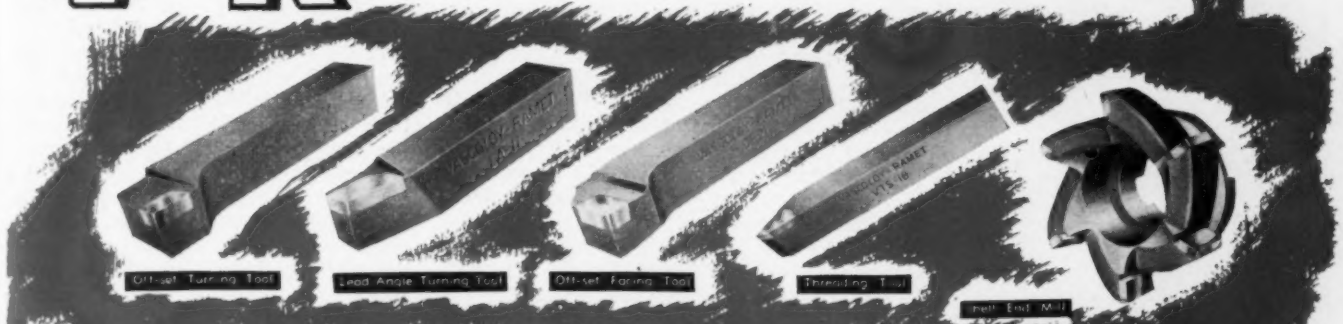
A technical bulletin, providing complete information regarding the new stainless steel is available from the company's Reading, Pa. or Union, N. J. offices.

(*Please turn to page 208*)

IDLE SURPLUS IS IDLE CAPITAL! CONVERT IT TO CASH . . . LIST YOUR COMPANY'S SURPLUS IN PURCHASING'S CLASSIFIED SECTION NEXT MONTH
SEE PAGE 358

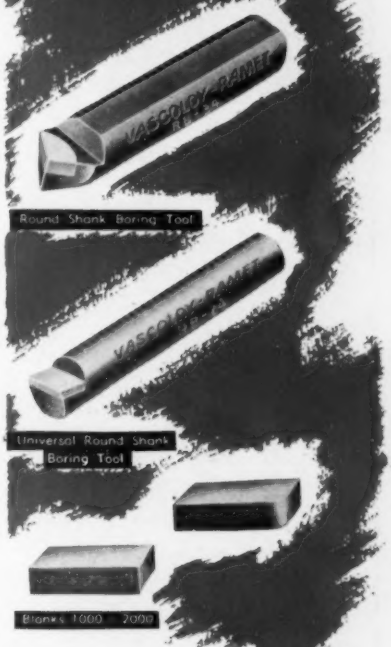
DATA SHEET NO. 1

FOR BUYERS OF CARBIDE STANDARD GRADES



STANDARD TOOL GRADES

	Grade	Hardness Rockwell "A" Scale
FOR STEEL: A tough, strong grade for very heavy roughing and for interrupted cuts.	EE	90
FOR STEEL: A medium grade for general machining.	EM	91
FOR STEEL: A hard finishing grade for light cuts at higher speeds.	E	92
FOR CAST IRON, NON-FERROUS METALS, AND NON-METALLIC MATERIALS: A general purpose grade for roughing and semi-finishing cuts.	2A68	91
FOR CAST IRON, NON-FERROUS METALS, AND NON-METALLIC MATERIALS: A hard grade for light roughing and finishing cuts.	2A5	92



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Because V-R carbides achieve a perfect balance of key purchasing factors, quality, cost and service, more and more purchasing executives are placing V-R at the top of their tool supply lists. Call or write your nearest Vascoloy-Ramet Field Engineer for any additional V-R tool information you may require.

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Sturdy, cold-formed head—continuous fibre structure.

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Flush type screws. Fit standard countersink.

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Safer, stronger—excellent seal. Made of alloy steel.

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Precision-ground thread with rust-resistant finish—five point styles

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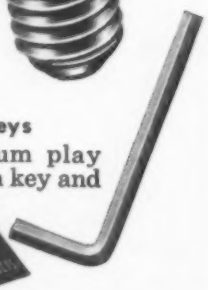
Minimum play between key and socket.



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High Temperature Ceramic Coatings for Steel

Early in the war when the shortage of nickel and chromium appeared imminent, the National Bureau of Standards undertook an extensive research program involving the possible replacement of nickel-chromium alloys by ceramic coated steel in a number of high-temperature applications. As a result of this research, said W. N. Harrison in symposium on modern metal protection sponsored by the Cleveland Sections of the American Chemical Society, the American Institute of Chemical Engineers, and the Electrochemical Society, a new type of ceramic coating for high temperature protection of mild steels was developed and used by the Army and Navy on certain aircraft and vehicle systems subject to severe service conditions. As these coatings have been shown by laboratory and service tests to be superior to conventional enamels for high-temperature service, they have many important peacetime applications.

The new NBS coatings embody several outstanding features including (a) high resistance to chipping under repeated severe thermal shock, (b) protection of the metal against oxidation during prolonged exposure in air at temperatures up to about about 1,250°F, (c) freedom from the cracking and blistering produced in conventional porcelain enamels under comparable conditions of high temperatures and severe thermal gradients, and (d) a mat surface that does not show highlights and, therefore, decreases the visibility.

The coatings first used during the war in the effort to meet the existing need were of the type which had previously been used on a limited number of automobile exhaust manifolds. These were actually porcelain enamels, and while giving valuable protection, did not fully meet the requirements of high temperature service. However, there are now a number of industrial enamelers who have had experience in regular commercial applications of the new type of ceramic coatings developed by the Bureau to meet the desired requirements. In National Bureau of Standards tests, specimens so coated have withstood ten quenches with cold water from 1200° F, the resulting permanent distortion of the metal causing no noticeable effect upon the coating.

Turbine blades, combustion chambers, and essential parts of temperature and pressure measuring devices are representative of the articles for which coatings are being sought that will protect the alloys against corrosion in operation.

Temperatures at which protection is being sought are limited only by the melting or softening points of the metals or alloys being coated. In some cases it is thought that if sufficient insulation can be provided by the coating, the coated metal may even be operated at gas temperatures substantially exceeding the maximum temperature at which the metal itself will retain sufficient strength.

There are two fundamentally different types of service in which high temperature ceramic coatings are applicable. One of these is long-time service (hundreds or even thousands of hours) within a temperature range that may be arbitrarily stated as 1200° to 2000° F. The other is service for periods of a few seconds up to perhaps five or ten minutes, where the gas temperatures may be on the order of 3500° F and above. Within limits and subject to further improvement, either of these conditions can be met at the present time. But the combination of the two—longer time and high temperature range—is a goal for future achievement.

Although military necessity has prompted most of the development work that has been done on high-temperature ceramic coatings for alloys, their industrial possibilities are increasing. Ceramic coatings of the type NBS No. A-19 have been found successful as industrial applications on the baffle-plates of continuous furnaces, and on the inner cylinders of burner jackets for domestic kerosene stoves. Potential applications include parts for heat interchangers for marine and other turbine engines, annealing boxes, and mufflers and tail pipes for busses, trucks and automobiles.

Another recent use for this type of ceramic coating is on the exterior of large industrial tanks that are coated internally, after sandblasting, with conventional type of porcelain enamel. Previously they were also sandblasted on the outside after firing, to provide a clean surface to which paint could be applied for aesthetic purposes. Now the practice has been introduced of sandblasting the tank once only, inside and out, then applying the conventional type of porcelain enamel to the inside and the new type of ceramic coating to the outside. The ceramic coating protects the steel from oxidization when the enamel is fired, eliminates the accumulation of scale in the furnace, and forms a better and more permanent base for paint, under the conditions of service at ordinary temperatures, than any paint-type base coat heretofore available.

For any particular application of the new type of ceramic coatings, the special conditions involved will determine the properties of the coatings to be emphasized, since, as in all cases of selection of materials available in nature, some compromise must be made. Inasmuch as the maximum of each desired property cannot be attained, the most important properties must be chosen and an attempt made to achieve the optimum in these properties without excessive sacrifice of others.

NEW RESIN ALCOHOL MADE FROM ROSIN

Commercial production of a new low-cost resin alcohol made from rosin, which has potentional application in a wide number of industries including textile, rubber, adhesive, detergent, paint, varnish and lacquer, is announced by the Hercules Powder Co., Wilmington, Del.

The new product is called hydroabietyl alcohol. It is the first commercially available primary alcohol to be developed from rosin, one of the cheapest organic acids available. It is a viscous liquid at room temperature. It is colorless, tacky, and

(*Please turn to page* 210)

The Wand That Makes 2=1

(IT'S PHOSPHOR BRONZE)

The wand in the welder's hand is a shielded arc electrode made of Riverside *Phosphor Bronze.* It is manufactured by one of Riverside's customers, whose name has been synonymous with scientific achievement in arc welding for more than forty years. Almost like a magic wand, the electrode, when properly employed unites copper, brass and many types of bronzes which are difficult to braze.

Phosphor Bronze is also used for building up and filling in bronze castings and surfaces of steel or cast iron. It leaves a dense high strength deposit of uniform structure. It is strong and non-corroding under widely varying temperatures and pressures.

Riverside produces *Phosphor Bronze* in many alloys, three of which—Grades "A", "C", and "D" are adaptable to welding. Any one of these alloys may be the specific solution to your problems and serve to retain the good will of your customers. Write for literature, today, also get complete information about *Nickel Silver* and *Beryllium Copper.*

INSIDE RIVERSIDE—*Our customers asked us to solve a serious problem. They were losing too much "down time" on their equipment because of small welding rod coils. It was imperative that the size of the coils be increased. Frankly, we did not believe we could crack this tough problem, but in jig time our engineers conceived and developed an original method for handling large heavy coils. We now supply these and everybody is happy.*

RIVERSIDE

THE
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NEW YORK CHICAGO RIVERSIDE • NEW JERSEY HARTFORD CLEVELAND

Reduce Production Headaches!

. . . use the right Cutting Fluid!

Questions concerning use and application of cutting fluids are the cause of many shop headaches. When critical parts have to be rejected and finishes are bad and tools have to be sharpened frequently, jobs go sour and schedules aren't met, cutting oils may be at the bottom of it. D. A. Stuart Oil Co. representatives have had plenty of experience in straightening out such situations, developing the correct application, improving production —curing the headaches. Let them prescribe for you.

Here's an oil...

THAT WILL HELP YOU— D. A. STUART'S KLEENKUT WATER-MIXED CUTTING OIL

Stuart's Controlled KleenKut water-mixed cutting oil has a long established, consistent record of excellent performance on the majority of metal-cutting operations. On drilling, reaming, sawing, tough turning, machining cast iron, cutting bolt threads, planing and milling, and other jobs where cooling qualities or cleanability are dominant requirements, KLEENKUT has meant machining excellence since 1912... Carries off heat rapidly . . . Increases tool life . . . Improves finishes . . . Flushes chips and contaminants from the work area . . . Reduces power consumption . . . Contains only top-quality ingredients . . . Chemically stable . . . Free from objectionable odor . . . Simple to clean from parts or machines . . . Mixes freely with water. *ANOTHER TIME-TESTED STUART PRODUCT!*

STUART *oil engineering goes with every barrel*

D. A. Stuart Oil Co.

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(*Continued from page* 208)

not miscible with water, in contrast to more commonly used alcohols. Of all rosin derivatives, it is the most resistant to discoloration and degradation by light and air.

Like other high molecular weight primary alcohols it is subject to esterification with both organic and inorganic acids, and etherification. It is miscible with alcohols, ketones, esters, ethers, hydrocarbons, and chlorinated hydrocarbons, and is compatible with many film-formers and resins used in protective coatings, adhesives, and other products.

For many years the published research of laboratories both in America and Europe has disclosed a wide variety of valuable products that may be derived from hydroabietyl alcohol such as: resins, foamers, detergents, wetting agents, emulsifying agents, plasticizers, corrosion inhibitors, antioxidants, parasiticides, bactericides, and compounds highly stable to ultraviolet light. Full investigation of these compounds has awaited the commercial availability of this unique resin alcohol.

Hydroabietyl alcohol can be used without further chemical reaction as a modifier for chlorinated rubber, polyamides, hydrogenated oils, textile sizes, rubber compositions, and essential oil vehicles.

Commercial production of hydroabietyl alcohol will be carried out in a unit of Hercules' new plant at Burlington, New Jersey.

* * *

IMPROVED PUSHER DEVICE FOR FORK TRUCKS

Simplified design, more efficient hydraulic operation and rugged construction with considerable decrease of weight are described as features of the improved pusher device for use on Clark fork trucks. Said to be suited for handling material in cartons and bags, in instances where material must be removed from pallets, the pusher makes it easy to remove the load as a unit rather than piece-by-piece.

Standard and maximum forward travel of the pusher rack is 55½". This may be reduced by 1" increments to meet special needs. Standard forks may be used for handling palletized unit loads. Where loads are to be removed directly from forks, multiple forks—usually five—are used. Additional information is available from Clark Equipment Company, Tructractor Division, Battle Creek, Mich.

(*Please turn to page* 212)

PREFERRED BY THE MAN ON THE JOB

TIGER GRIP

The Work Glove that Outwears Several Pairs of Ordinary Woven Fabric Gloves

The man on the job has found that "TIGER GRIP" gives him more of everything he expects from a work glove! "TIGER GRIP" gives him *more* protection —because its specially knitted material contains hundreds of "loops" in every square inch, to cushion and protect the hand. He gets *more* wear — because these entirely different gloves outlast several pairs of ordinary woven fabric gloves! And he gets washability without excessive shrinkage! Treated with Johnson's "DRAX" to make it water repellent! ADVANCE Work Gloves are laboratory tested, and re-tested under actual working conditions!

Guaranteed by Good Housekeeping

Send For New CATALOG

Big, new catalog lists full line of ADVANCE work gloves including leather palm gloves, flannel gloves, wire stitched gloves, welder's gloves, etc., as well as a complete line of safety and protective clothing for every industry.

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It's PORTO-SHEARS* for Time-Saving Sheet Metal Shearing!

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DON'T snip—add *ZIP* to your sheet metal work with powerful Black & Decker Electric Porto-Shears! They cut sheet metal too tough for snips. Speed up jobs where snips are slow. Feed easily with only a light forward pressure. Easier to follow straight lines, irregular patterns, curves down to ¾" radius without fear of rejects, because *cutting action is always visible.*

Black & Decker 16-Gage Porto-Shears cut up to rated capacity in steel or galvanized iron—about one gage thinner in Monel or stainless—50% above rating in copper, aluminum, lead and other non-ferrous metals. Can be adapted to cut thin sections of laminated wood or sheet plastics. Ask your nearby Black & Decker Distributor for details. Write for free catalog to: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Maryland.

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It's working conditions that help keep workers satisfied. A major factor is the installation of Halsey Taylor Coolers and Drinking Fountains throughout plant and office. Patented features mean greater health—safety, trouble proof service. Write for catalog.

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LITHOGRAPHED METAL CONTAINERS COMBINE BEAUTY AND PROTECTION

The use of colorfully lithographed metal containers to package crystallized ginger candies is reported by the Can Manufacturers Institute. The new can, an example of modern tin printing art, is said to be indicative of a current trend

toward the packaging of high quality candies and confections in steel-and-tin containers. Five colors are blended to form the oriental motif lithographed on the outer surface of the can.

In addition to vivid coloring, the half pound can offers protection for its contents against shelf deterioration and staleness, thereby increasing consumer appeal, according to the institute. Re-use of the tin after the contents have been consumed is encouraged and facilitated by use of a slip cover closure.

INDOOR, OUTDOOR INSULATION FOR HOT AND COLD LINES

New Foamglas pipe insulation that can be used for both hot and cold lines, indoors and outdoors, is announced by the Pittsburgh Corning Corporation, Pittsburgh, Pa. The new insulation, of cellular glass construction, is characterized as being the ideal pipe protector for processing industries where exact temperature control is required, wherever heat is to be retained or excluded.

Of true glass composition, the new product retains its original insulating efficiency permanently. It is unaffected by humidity, is highly resistant to fumes, vapors, acid atmospheres, and many other elements which cause some insulating materials to lose their insulating value. It is non-combustible and acts as a fire retardant. It is strong, rigid, light in weight, and easy to cut and fit with ordinary tools.

The new insulation is being manufactured for all sizes of pipe, and comes in two equal half sections, 18 inches long. When installed according to the manufacturers specifications, the new Foamglas pipe-insulation may be used through temperature ranges from minus 200° F to plus 800° F. It is extremely durable and when properly applied, it is stated that it may be expected to outlast the piping or equipment on which it is installed.

One of the outstanding characteristics of Foamglas is its imperviousness to water and water vapor. By virtue of this property it has the same thermal conductivity, whether wet or dry, and will maintain its original low rate of heat transfer permanently—regardless of exposure—without weather proofing or other protective coverings.

Artist – Sydney Butchkes, native of Kentucky

KENTUCKY— *annual purchases: $1⅓ billion — mostly packaged.*

CONTAINER CORPORATION OF AMERICA

many millions in use

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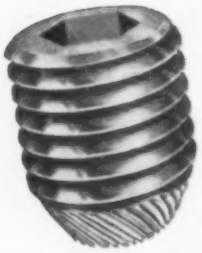

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Knurling of Socket Screws originated with "Unbrako" in 1934.

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The "Unbrako" Socket Set Screw with the Knurled Cup Point is a *Self-Locker*—its cleverly knurled point holds tight—regardless of the most chattering vibration. Yet, it can be backed-out and used over again and again. Many, many millions in use,—and no wonder! Available in sizes from #4 to 1½" in diameter; full range of lengths. Write for your copy of the "Unbrako" Catalog.

Ask for the name and address of your nearest "Unbrako" Distributor

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High lift and pallet types available. Also Portable Elevators, Hydraulic Lifts, Red Giant Hand Liftrucks and other material handling equipment. Send for Bulletins.

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SKYCO NO-GLARE acts like a sun shade over your plant because it keeps out glare, admits 94 per cent of the natural light and reduces inside summer temperatures approximately 15 per cent. SKYCO NO-GLARE is light blue and may be brushed or sprayed. It is easily removed when necessary, and very economical . . . single gallons $3.50, 5 gallon pail $3.25 per gallon, f.o.b. Cleveland. Orders shipped the same day received. Order a trial supply today.

Used for Over 20 Years and Manufactured Only By

THE SKYBRYTE COMPANY

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REMOVING "WATER MARKS" FROM ALUMINUM

In response to an inquiry as to how to remove "water marks" from aluminum, *The Technical Advisor*, published by the Reynolds Metals Co., states that "the water mark" is usually a gray or whitish substance which is an aluminum salt formed by chemicals in the water reacting with the aluminum and its alloying elements. These markings result whenever water is allowed to stand against aluminum for any appreciable length of time. For this reason it is desirable to store aluminum sheet on one end and space sheets slightly apart wherever possible so that any moisture they may have collected may dry out. Never allow aluminum products to stand outdoors unprotected unless the surfaces are subsequently to be painted.

"Watermarks can be moved by mechanically abrading the surface. A power driven rotary wire brush is recommended. The salt also can be removed chemically by a warm caustic solution or commercial etching compound.

"The alloy content of the aluminum greatly influences its susceptibility to watermarking. The copper-bearing alloys (17S, 24S, (bare), 63S R361 (under some conditions, etc.) are most susceptible, the purer alloys (2S, 3S, etc.) being much more resistant. 52S is particularly susceptible because of its high magnesium content.

"Practically all heat-treated aluminum will have some water marks from the quenching operation. Coiled stock will almost always have water marks because the tightly wound coils offer little opportunity for the evaporation of any entrained moisture.

"It should be emphasized that water marks are purely superficial, having practically no depth. Thus they in no way lower the mechanical properties of the material. A slight etch will usually remove them without any difficulty."

* * *

ADHESIVE FOR SILICONE RUBBER

A new adhesive expressly designed for bonding silicone rubber to itself and to glass, metals, and ceramics, has been developed by the General Electric Chemical Dept., Pittsfield, Mass. Known as G-E adhesive 12509, the new type bonding agent, possessing properties similar to silicone rubber, remains flexible and resilient over temperatures ranging from —70° F. to 520° F. and withstands continuous temperatures of 3.0 to 350° F. in a dry air circulating oven. It can also be used to bond glass to glass, glass to metals, and metals to metals. The new adhesive has proved especially useful in securing silicone rubber door gaskets directly to oven doors eliminating the need for clamps and bolts. It is also said to be effective for joining the ends of extruded cured stock to form O-ring gaskets of uniform thickness. Previously these gaskets had to be made by molding the loose ends of uncured stock together in a press causing one portion of the ring to be smaller than the rest.

THIS MOTHER LEARNED WHAT *EMERGENCY LIGHTING* MEANS

Speeding through the storm was bad enough. Then came the blinding flash of lightning that plunged the entire area into darkness. But up ahead, a single building stood out like a beacon. It was the hospital. And when they reached it what a relief to find the lights still on.

This hospital was safeguarded against lighting failure, which can happen despite all precautions of utility companies. It was safeguarded by an emergency lighting system, powered by Exide Batteries which instantly and automatically takes over the emergency lighting load when normal sources fail.

There are Exide Batteries for every storage battery need. They supply safe, dependable motive power for battery electric trucks, mine locomotives and shuttlecars. They are used by telephone and telegraph companies, radio stations and power companies. On railroads, ocean vessels and aircraft, they perform many tasks. And on millions of cars, they give daily proof that "When it's an Exide, you start."

For 60 years the name Exide has stood for dependability, economy, safety and long life. Information regarding the application of storage batteries for any business or industrial use is available upon request.

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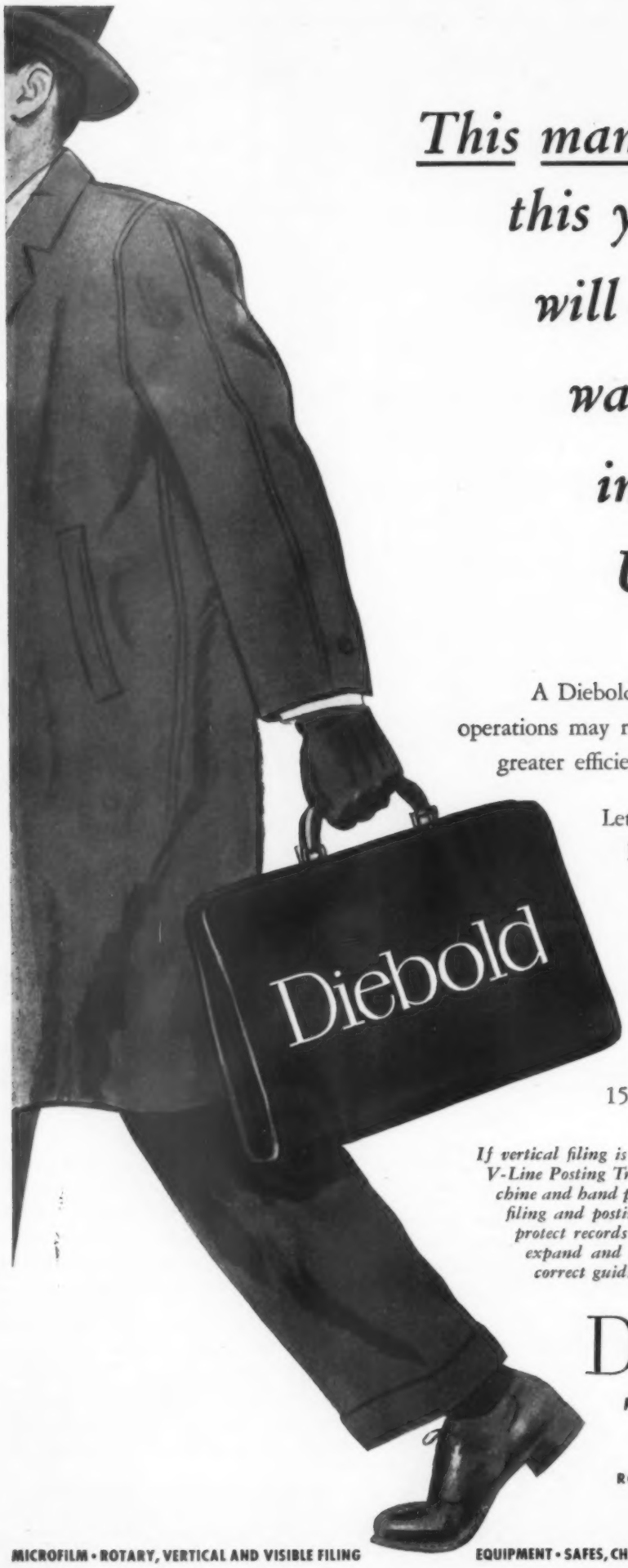
BATTERIES

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto



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Let a Diebold Man survey your record-handling operations at no cost to you. Diebold makes *all four* types of record equipment, so the Diebold Man's recommendation is *unbiased*. He is a specialist in properly fitting equipment facilities to job requirements. Look up Diebold in your phone book or write—Diebold, Inc., 1519 Fifth St., S.W., Canton 2, Ohio.

If vertical filing is the answer to your problem—V-Line Posting Trays are recommended for machine and hand posting jobs. They speed finding, filing and posting . . . fit most form sizes . . . protect records from becoming dog-eared . . . expand and contract easily . . . encourage correct guiding . . . save space and money.

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PRODUCTION EXECUTIVE

Office Equipment and Supplies

Monthly FORMS FORUM

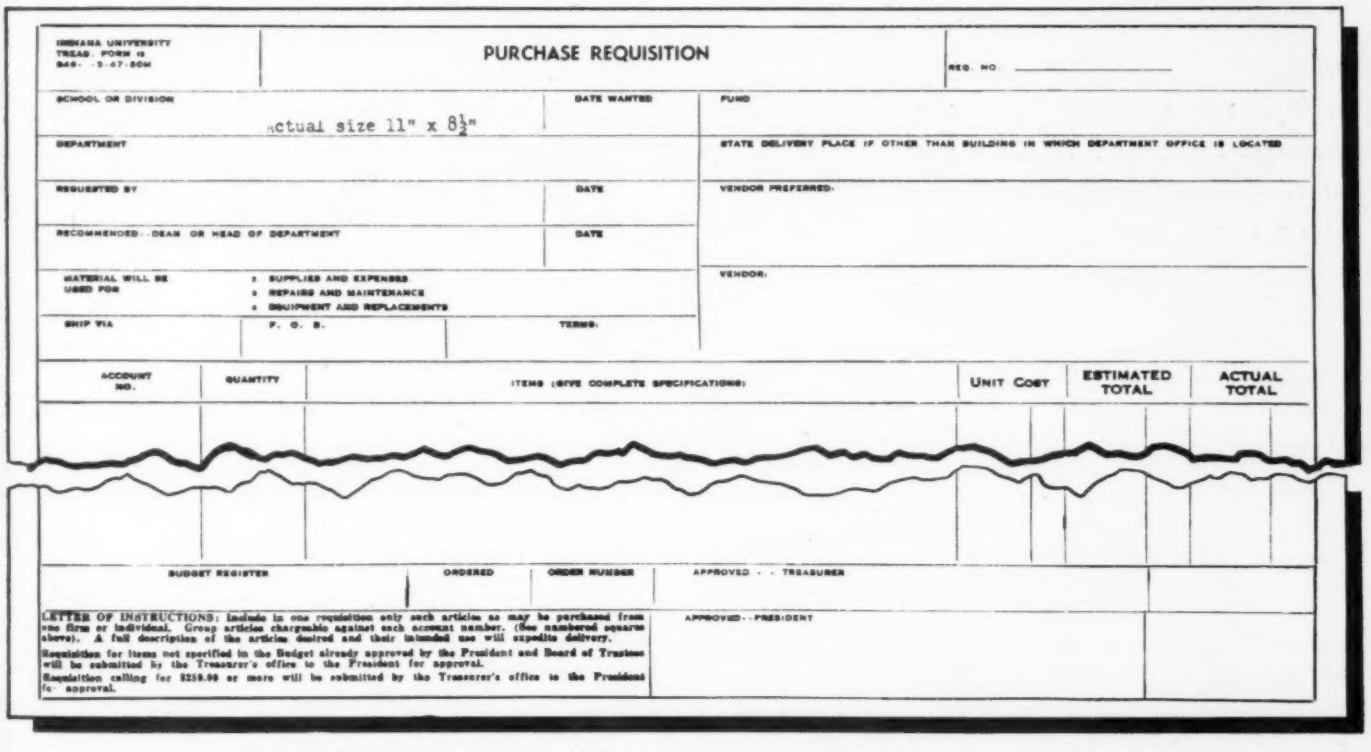
Requisition with Special Form for Tabulating Bids on Reverse Side, and Query and Reply Request for Quotation that is Furnished in Duplicate

The accompanying series of forms includes the principal ones used by the Purchasing Department of Indiana University, Bloomington, Ind., and were supplied for use in the Forum by Claude J. Black, Purchasing Agent.

In general the forms are quite self explanatory. The purchase requisition form, it will be noted, is quite different from those in general use in industry. The reverse carries a special form bearing the heading "Abstract of Bids". It provides spaces for showing "material", "quantity", and quotations by the three principal bidders, the name of the successful bidder, and "Reason for Choice of Vendor."

The requisition form, which is on 11" x 8½" sheet, is reproduced below, and the "Abstract of Bids" appears on the following page.

Also reproduced are the two forms of the "Request for Quotation",—the original or actual request, and the second sheet which is used by supplier as reply form:



INDIANA UNIVERSITY
TREAS. FORM 12
849- -3-47-50M

PURCHASE REQUISITION

REQ. NO. _____

SCHOOL OR DIVISION

DATE WANTED

FUND

Actual size 11" x 8½"

DEPARTMENT

STATE DELIVERY PLACE IF OTHER THAN BUILDING IN WHICH DEPARTMENT OFFICE IS LOCATED

REQUESTED BY

DATE

VENDOR PREFERRED:

RECOMMENDED - DEAN OR HEAD OF DEPARTMENT

DATE

MATERIAL WILL BE USED FOR
1 SUPPLIES AND EXPENSES
2 REPAIRS AND MAINTENANCE
3 EQUIPMENT AND REPLACEMENTS

VENDOR:

SHIP VIA

F. O. B.

TERMS:

ACCOUNT NO.	QUANTITY	ITEMS (GIVE COMPLETE SPECIFICATIONS)	UNIT COST	ESTIMATED TOTAL	ACTUAL TOTAL

BUDGET REGISTER | ORDERED | ORDER NUMBER | APPROVED - - TREASURER

LETTER OF INSTRUCTIONS: Include in one requisition only such articles as may be purchased from one firm or individual. Group articles chargeable against each account number. (See numbered squares above). A full description of the articles desired and their intended use will expedite delivery.

Requisition for items not specified in the Budget already approved by the President and Board of Trustees will be submitted by the Treasurer's office to the President for approval.

Requisition calling for $250.00 or more will be submitted by the Treasurer's office to the President for approval.

APPROVED - - PRESIDENT

Purchase Requisitions used by Indiana University. The reverse carries a special form for tabulating bids of principal bidders, which is reproduced on following page.

The "Letter of Instructions" in lower left hand corner reads: "Include in one requisition only such articles as may be purchased from one firm or individual. Group articles chargeable to each account number. A full description of the articles desired and their intended use will expedite delivery.

"Requisition for items not specified in the Budget already approved by the president and board of trustees will be submitted by the treasurer's office to the president for approval.

"Requisition calling for $250. or more will be submitted by the treasurer's office to the president for approval."

(*Forms Forum continued from page 217*)

ABSTRACT OF BIDS

DATE

PURHCASE REQUISITION			BIDDER NO. 1	BIDDER NO. 2	BIDDER NO. 3
ITEM NO.	NAME OF SUCCESSFUL BIDDER				
	MATERIAL	QUANTITY			
TOTALS					
TERMS					
F.O.B.					

QUOTATION TAKEN BY PHONE ..... NAME AND TITLE

REASON FOR CHOICE OF VENDOR

- ☐ LOWEST PRICE
- ☐ EARLY DELIVERY
- ☐ BETTER QUALITY
- ☐ REQUIRED DESIGN
- ☐ ONLY AVAILABLE SOURCE
- ☐ OTHERS

PURCHASING DEPARTMENT

Left

"Abstract of Bids" form which is printed on back of Purchase Requisition.

Right

"Request for Quotation." This form on white stock is sent to supplier, with reply form on canary stock. The two forms are reproduced. The letter text of the former is directed to the supplier, and that of the latter is directed to the Purchasing Department.

Treas. Form No. 15 B-41—9-47—2M

REQUEST FOR QUOTATION
(This is not an Order)

From:

INDIANA UNIVERSITY
PURCHASING DEPARTMENT
BLOOMINGTON, INDIANA

(date)

To:

R. Q. No. .....

Note Carefully

Quotations must be in by .....

Unless otherwise understood, there are no restrictions on the number of items or the quantity that may be ordered.

If substitutes are offered, give full information.

Right is reserved to reject any and all bids.

In quoting use the canary duplicate. Give complete information in the space provided.

When corresponding about this request, refer to the above reference number.

Indiana University is a political subdivision of the State of Indiana, and is, therefore, not subject to any excise taxes imposed by the Federal Government.

Please furnish us with your quotation on the items enumerated:

For shipment to ....., Delivery F.O.B. ..... Via .....

If you are not quoting a delivered price, please indicate your shipping point, and specify how you will ship. Please give the approximate weight and rate so the delivered cost can be determined. The most practical way is always desired.

Quantity	Unit	Catalog Number and Description of Article	List or Unit Price	Unit	Less Trade Discount	Net Cost

Cash Discount ..... Net ..... Days Net Total Cost

Delivery can be made from our stock ..... or factory ..... When .....

Prices effective until ..... Date ..... Are prices subject to change if ordered placed ..... Yes or No

Keep this copy for your files.
Return the canary sheet as your quotation.
If lists accompany this request, keep one copy for your record and return the other copy with the canary sheet.

INDIANA UNIVERSITY

By .....
C. J. Black, Purchasing Agent

Left

The heading of the reply copy on canary stock reads: "Quotation—"Return this Copy." At bottom of form there is space for signature of bidder.

subject to any excise taxes imposed by the Federal Government.

We are pleased to furnish you with our quotation on the items enumerated:

For shipment to ....., Delivery F.O.B. ..... Via .....

We are unable to quote F.O.B. destination. Therefore, our price is F.O.B. ....., shipping point.

Weight to approximate ..... lbs. Rate to apply ..... Via .....

Quantity	Unit	Catalog Number and Description of Article	List or Unit Price	Unit	Less Trade Discount	Net Cost
		Be sure you have indicated FOB point and delivery				
		Cash Discount ..... Net ..... Days Net Total Cost				

Delivery can be made from our stock ..... or factory ..... When .....

Prices effective until ..... Date ..... Are prices subject to change if ordered placed ..... Yes or No

Keep white copy for your files.
Return this sheet as your quotation.
If lists accompany this request, keep one copy for your record and return the other copy with the canary sheet.

Sign Here .....

By .....

Date .....

(*Please turn to page 220*)

AMERICA HAS COME A LONG WAY IN THE PAST FIFTY YEARS

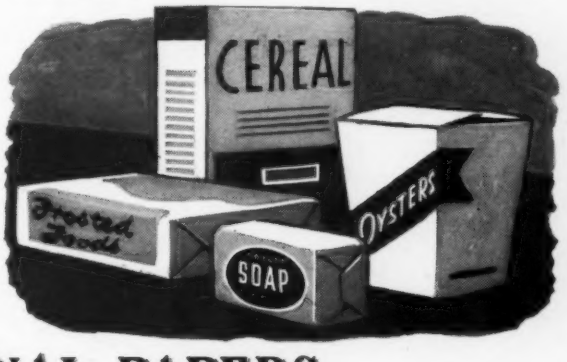
"Get off those crackers, Blackie!"

Yesterday's open cracker barrel is a choice item of Americana, a museum piece. Today, from Maine to Monterey, from rural store to supermarket, you'll see row after row of *packaged* foods . . . safeguarded against dust, dirt and the grocery cat's prowlings.

Storekeeping and food selling have come a long way in fifty years! So have American standards of hygiene, American education in sanitation.

It's been a wonderful half century! During these fifty years, we have contributed our own share—through paper and paper products—to the improvement of health and hygiene, to the broadening of education. Paper and printing have carried the torch for better living. They have widened markets for industry . . . brought comforts and conveniences undreamed of fifty years ago.

What's ahead? Under free enterprise, the sky's the limit! International Paper Company, 220 East 42nd Street, New York 17, New York.



INTERNATIONAL PAPERS

For Printing and Converting

(*Forms Forum continued from page 218*)

INDIANA UNIVERSITY
Bloomington, Ind.

OFFICE OF THE TREASURER
J. A. FRANKLIN, TREASURER
C. J. BLACK, PURCHASING AGENT

PURCHASE ORDER
FORM NO. 36 20M 12-46

DATE | REQ. NO. | ORDER NO.

TO Vendor

6-5/8" x 11" – this sheet only; rest of purchase order form is on 8½" x 11" sheets

THE ABOVE NUMBERS MUST APPEAR ON ALL BILLS, INVOICES AND PACKAGES

MARK AND SHIP TO

INDIANA UNIVERSITY
ORDER NO.
BLOOMINGTON, INDIANA

MARK ALL SHIPMENTS ON THIS ORDER AS INDICATED AT LEFT

MARK ORDER AND REQUISITION NUMBERS ON ALL PACKAGES

SHIP VIA | F. O. B. | TERMS

QUANTITY	ARTICLES AND DESCRIPTION	AMOUNT

INSTRUCTIONS

ACKNOWLEDGMENT: ACKNOWLEDGE RECEIPT OF THIS ORDER AND STATE WHEN AND FROM WHAT POINT SHIPMENT WILL BE MADE.
INVOICES : RENDER INVOICES IN DUPLICATE, FULLY ITEMIZED, USING ENCLOSED INVOICE - VOUCHER FORM. BILLS WILL NOT BE AUDITED FOR PAYMENT UPON ANY OTHER FORM. ON ACCOUNT OF STATE REQUIREMENTS INVOICE MUST BE NOTARIZED IN ADVANCE OF PAYMENT.
SHIPMENTS : ALL SHIPMENTS MUST BE MARKED AND SHIPPED AS INDICATED ABOVE.
TERMS : TERMS WILL BE CONSIDERED AS 2% - 10 DAYS, NET 30 UNLESS OTHERWISE SPECIFIED.
CORRESPONDENCE : SEND ALL CORRESPONDENCE, INVOICES, ETC. RELATING TO THIS ORDER TO THE PURCHASING DEPARTMENT REFERRING THEREON TO THE ORDER AND REQUISITION NUMBERS.

ALL LOCAL AND TRUCK DELIVERIES TO BE MADE AT THE RECEIVING DEPARTMENT, STORES AND SERVICE BUILDING, UNLESS OTHERWISE INSTRUCTED.

INDIANA UNIVERSITY

By_____
Purchasing Agent

SHEET NO.

The Purchase Order is a five-sheet snap-out form, size 8½" x 11". Its format differs from the standard purchase order form in that the first sheet or vendor's copy is but 6¾" wide. The extra width on the University copies, as will be noted from reproduction of Page 3 below, is devoted to box spaces for indicating "Dept.", "Fund", and "Class", and also "Estimate".

(*Please turn to page 222*)

The five copies of the form are distributed as follows: Vendor; Purchasing Department file; Receiving Department with form for recording receiving data; copy for originating department, and the No. 5 or Purchasing Department's Follow-Up copy. The last is on heavy stock, and lower part carries form (see Page 222) for receiving information, invoice record, and other purchase history.

INDIANA UNIVERSITY
Bloomington, Ind.

3

OFFICE OF THE TREASURER
J. A. FRANKLIN, TREASURER
C. J. BLACK, PURCHASING AGENT

RECEIVING DEPT. COPY

DEPT
FUND
CLASS

DATE | REQ. NO. | ORDER NO.

TO 8½" x 11"

THE ABOVE NUMBERS MUST APPEAR ON ALL BILLS, INVOICES AND PACKAGES

MARK AND SHIP TO

INDIANA UNIVERSITY
ORDER NO.
BLOOMINGTON, INDIANA

MARK ALL SHIPMENTS ON THIS ORDER AS INDICATED AT LEFT

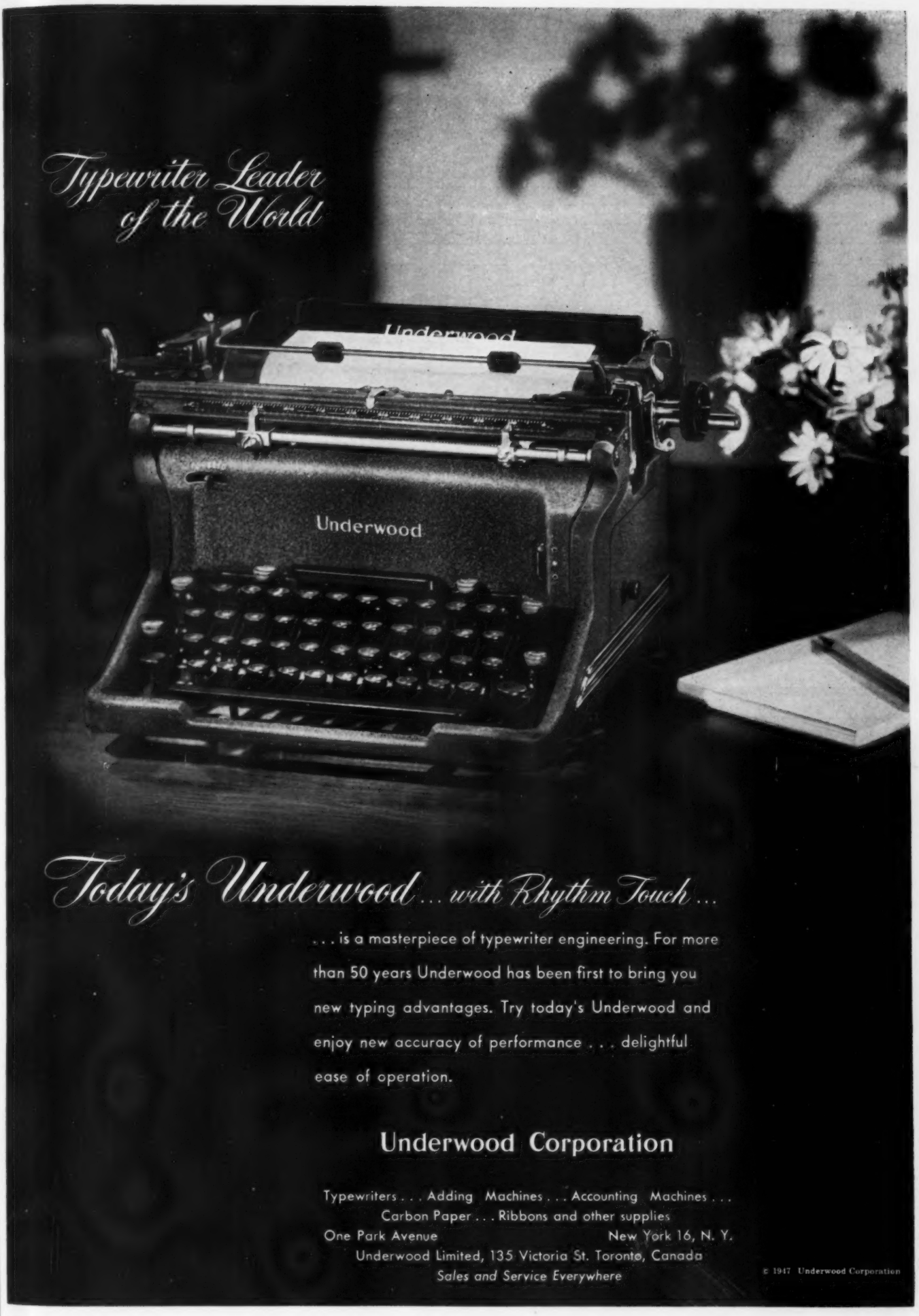
MARK ORDER AND REQUISITION NUMBERS ON ALL PACKAGES

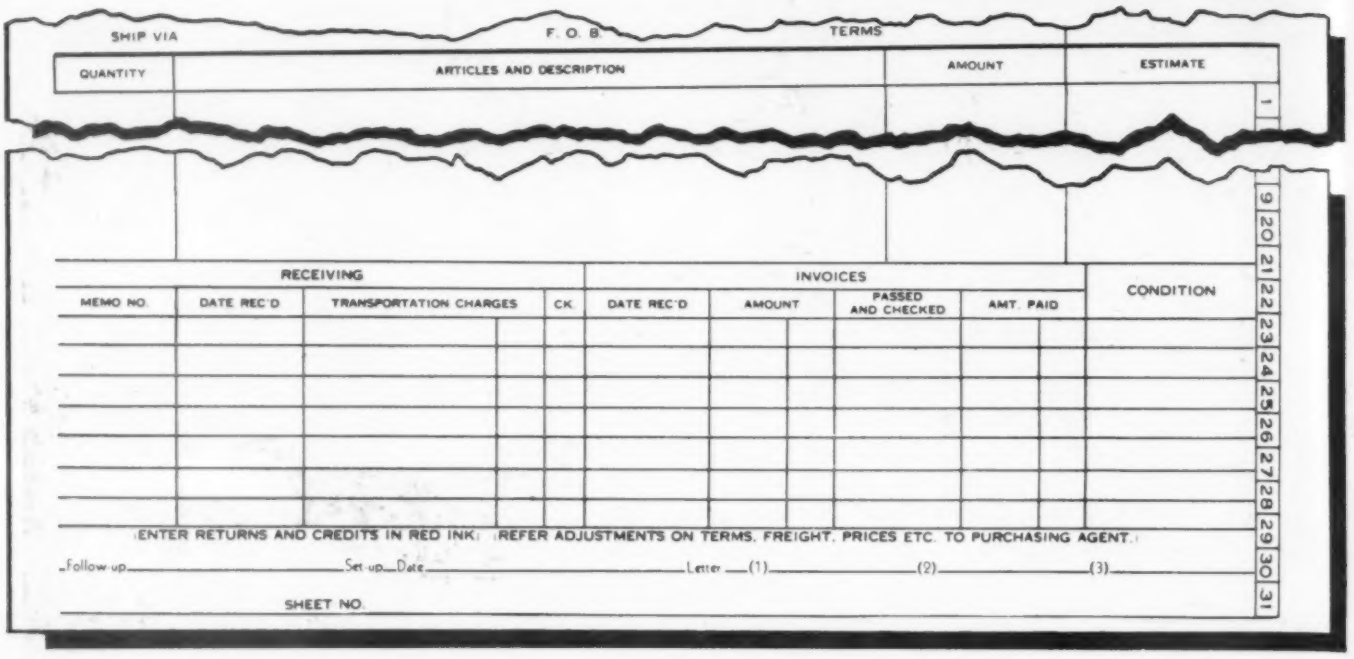
SHIP VIA | F. O. B. | TERMS

QUANTITY	ARTICLES AND DESCRIPTION	AMOUNT	ESTIMATE

RECEIVING MEMO NO	DATE	HOW SHIPPED	TRANSPORTATION COST	BY	REMARKS DAMAGE BREAKAGE ETC

SHEET NO.


Typewriter Leader of the World
Underwood
Underwood
Today's Underwood ... with Rhythm Touch ...
... is a masterpiece of typewriter engineering. For more than 50 years Underwood has been first to bring you new typing advantages. Try today's Underwood and enjoy new accuracy of performance ... delightful ease of operation.
Underwood Corporation
Typewriters ... Adding Machines ... Accounting Machines ...
Carbon Paper ... Ribbons and other supplies
One Park Avenue New York 16, N. Y.
Underwood Limited, 135 Victoria St. Toronto, Canada
Sales and Service Everywhere
© 1947 Underwood Corporation



SHIP VIA F. O. B. TERMS

QUANTITY	ARTICLES AND DESCRIPTION	AMOUNT	ESTIMATE

RECEIVING

MEMO NO.	DATE REC'D	TRANSPORTATION CHARGES	CK.

INVOICES

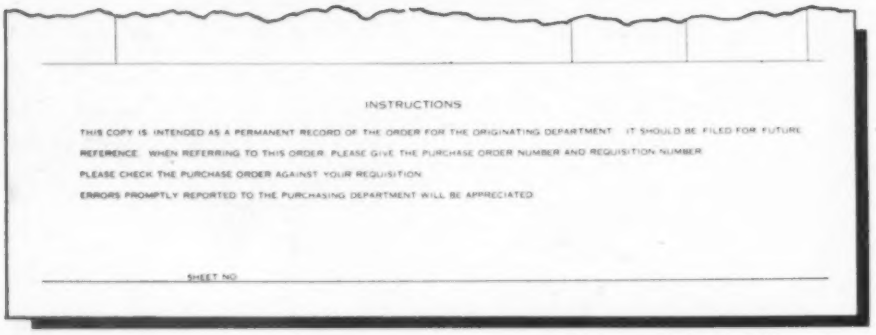
DATE REC'D	AMOUNT	PASSED AND CHECKED	AMT. PAID	CONDITION

ENTER RETURNS AND CREDITS IN RED INK. REFER ADJUSTMENTS ON TERMS, FREIGHT, PRICES ETC. TO PURCHASING AGENT.

Follow-up Set-up Date Letter (1) (2) (3)

SHEET NO.

1 9 20 21 22 23 24 25 26 27 28 29 30 31



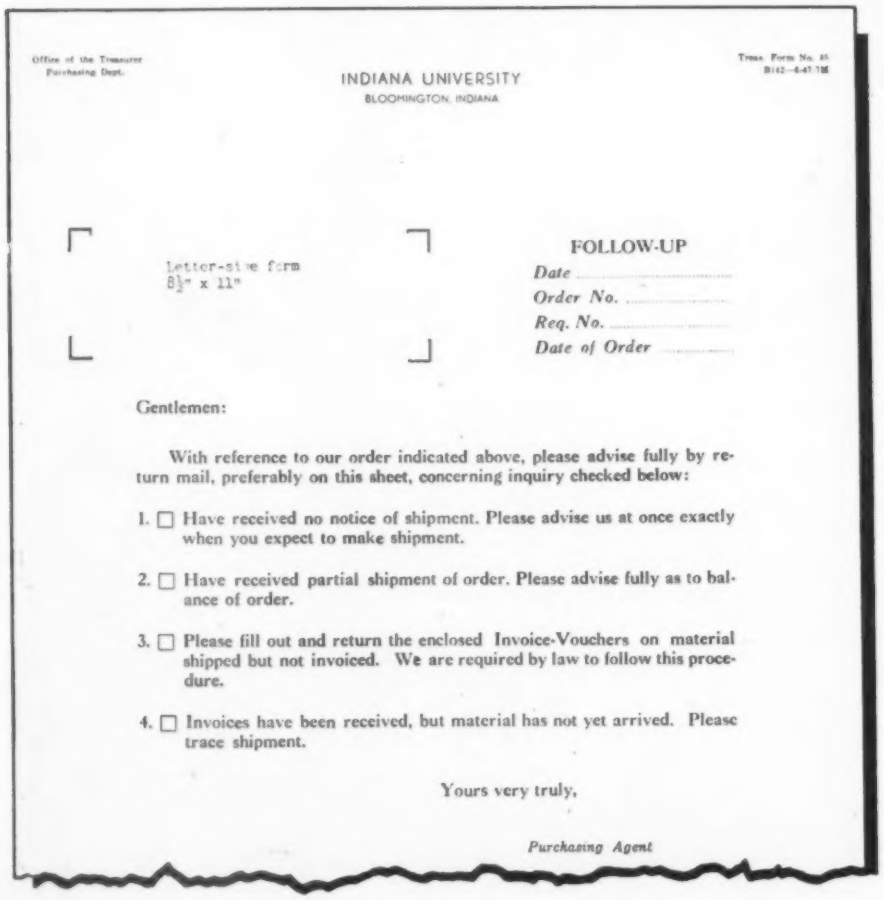
INSTRUCTIONS

THIS COPY IS INTENDED AS A PERMANENT RECORD OF THE ORDER FOR THE ORIGINATING DEPARTMENT. IT SHOULD BE FILED FOR FUTURE REFERENCE. WHEN REFERRING TO THIS ORDER, PLEASE GIVE THE PURCHASE ORDER NUMBER AND REQUISITION NUMBER.

PLEASE CHECK THE PURCHASE ORDER AGAINST YOUR REQUISITION.

ERRORS PROMPTLY REPORTED TO THE PURCHASING DEPARTMENT WILL BE APPRECIATED.

SHEET NO.



Office of the Treasurer
Purchasing Dept.

Treas. Form No. 35
B142—6-47-15M

INDIANA UNIVERSITY
BLOOMINGTON, INDIANA

Letter-size form
8½" x 11"

FOLLOW-UP

Date .....
Order No. .....
Req. No. .....
Date of Order .....

Gentlemen:

With reference to our order indicated above, please advise fully by return mail, preferably on this sheet, concerning inquiry checked below:

1. ☐ Have received no notice of shipment. Please advise us at once exactly when you expect to make shipment.
2. ☐ Have received partial shipment of order. Please advise fully as to balance of order.
3. ☐ Please fill out and return the enclosed Invoice-Vouchers on material shipped but not invoiced. We are required by law to follow this procedure.
4. ☐ Invoices have been received, but material has not yet arrived. Please trace shipment.

Yours very truly,

Purchasing Agent

(Continued from page 220)

The form at the top of the page is that which is printed on Purchasing Department's Follow-Up copy of the purchase order. This copy is printed on extra-heavy stock.

The form provides space for recording receiving information, invoice record, and "Condition", and also Follow-up record.

●

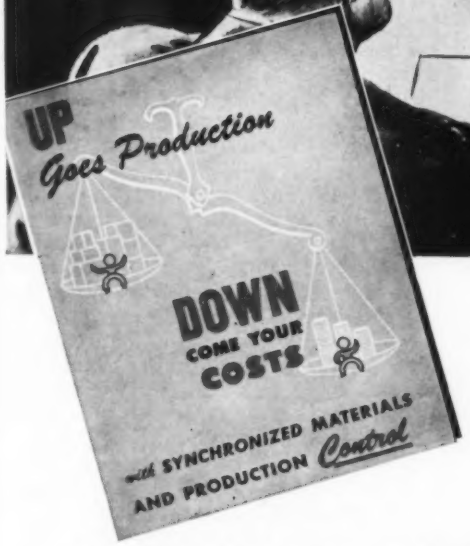
The second reproduction is of lower part of the purchase order copy that is sent to the originating department.

●

The third reproduction is of printed Follow-Up letter on letter-size stock. It saves considerable letter writing.

●

(Please turn to page 224)



FREE FOLDER tells 16 specific ways to increase output and reduce manufacturing costs. Phone the Remington Rand office in your city or write Systems Division, 315 Fourth Ave., New York 10, requesting your copy of KD-367.

Remington Rand

THE FIRST NAME IN BUSINESS SYSTEMS

. . . A Synchronized Materials and Production Control System That:

BOOSTS OUTPUT . . .

SIMPLIFIES PROCEDURES . . .

REDUCES "BREAK-EVEN" POINT

Every factory department gains when operations are simplified—and integrated—under Remington Rand's system of Synchronized Materials and Production Control.

It's been accomplished time after time, in all types of industry, in small as well as large plants . . . this system prevents production bottlenecks . . . makes fuller, more economical use of machine capacity and workers' time . . . puts ordering of materials and component parts on an accurate, planned basis with proper allowance for vendor's lead time and shop flow time . . . assures adequate yet non-excessive stocks purchased to your best advantage . . . furnishes a sound, factual basis for making delivery promises . . . and provides the necessary day to day follow-up to *assure* those deliveries.

The system is flexible . . . easily tailored to the exact requirements of your plant by production-minded Remington Rand installation specialists. Their new methods simplification techniques may save you a large annual sum—plus reduction in clerical costs.

You want more production . . . you want simpler, less costly procedures and you want a lower break-even point. Wait no longer. Get in touch with Remington Rand today. The folder shown at the left will give you preliminary facts.

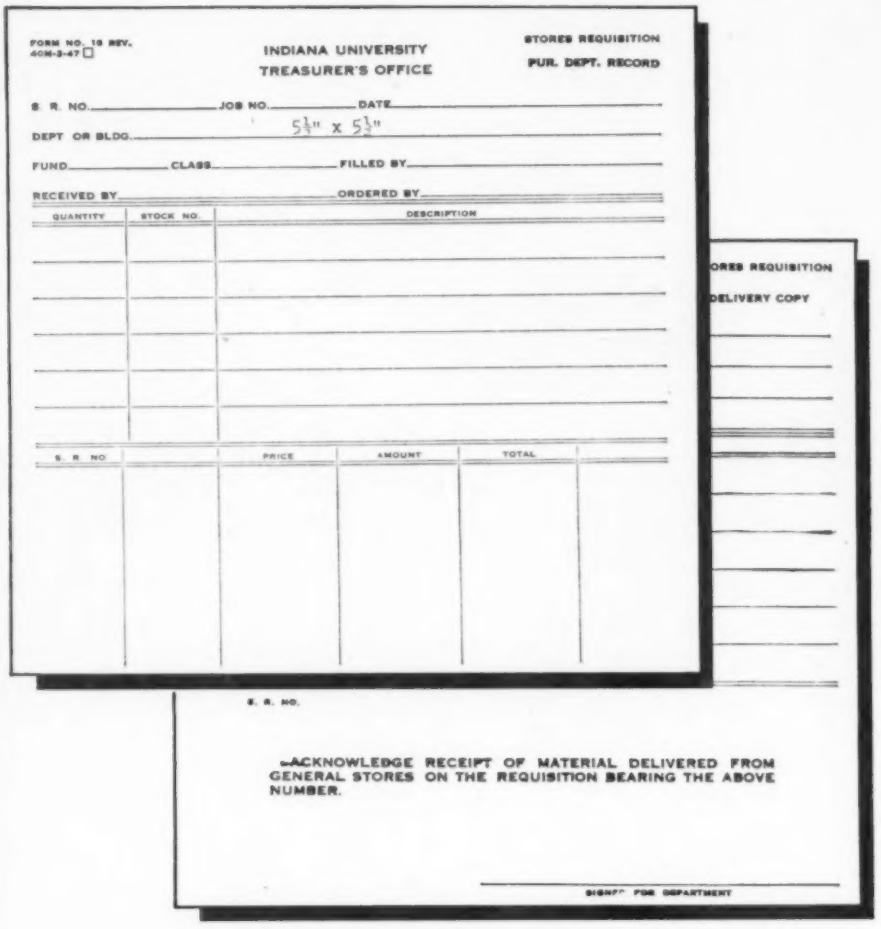
Old Town

RIBBONS
CARBONS
Duplicating
Supplies

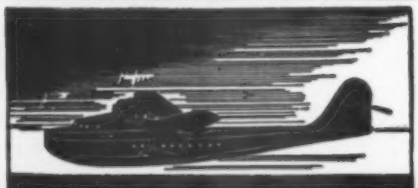
For those who prefer the best

BROOKLYN 17, N. Y.

(*Forms Forum continued from page 222*)



Stores requisition form, Indiana University, and copy used by originating department for acknowledging receipt of material.



THIN PAPERS
Reduce
TYPING, MAILING
and FILING COSTS
Use
ESLEECK
THIN PAPERS

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

Esleeck Manufacturing Co.
Turners Falls, Mass.

PAISLEY PLANTS CONSOLIDATE, NAME NEW SALES EXECUTIVES

Morningstar, Nicol, Inc., has announced the consolidation of its industrial adhesive manufacturing subsidiaries, Paisley Products, Inc. of Illinois, and Paisley Products, Inc. of New York.

Murray Stempel, formerly general manager of the Chicago company has been elected vice-president and general manager of the consolidated operations. Earl C. Lenz, formerly sales and service manager of the Chicago plant, has been promoted to general sales manager. He will also continue to direct the advertising and sales promotional activities of the consolidated operations. L. J. La Brie, formerly technical director, has assumed the position of sales manager of the New York plant.

ROYAL ANNOUNCES MANAGERIAL PROMOTIONS

Office typewriter sales manager David B. Starrett, Royal Typewriter Co., has announced the following managerial promotions:

James D. Farr, former Charlotte, N. C., manager, has been appointed assistant sales manager, office typewriter division, to fill the vacancy created when former assistant sales manager John B. Eccles was named district manager at Washington, D. C. Manager Farr started with Royal as a salesman at Knoxville, Tenn., in 1934, after eight years of experience in selling office supplies and business equipment. In 1936, he was selected to manage Royal's Montgomery, Ala., office and in 1937, he was transferred to Charlotte as Branch Manager.

To succeed Mr. Farr at Charlotte, Royal has called upon R. H. Greenlee, former Birmingham, Ala., manager. Mr. Greenlee began his career with Royal as a salesman at Knoxville, Tenn., in April, 1940. In July of that year, he was promoted to the managership at Birmingham.

J. B. Longley, former Montgomery manager, has been promoted to district manager at Baltimore. Starting with Royal as a government salesman in April, 1932, manager Longley was made assistant manager at Washington, D. C., in April, 1937. In September, 1945, he was chosen to head the Montgomery office.

Succeeding manager Longley at Montgomery is former Houston salesman Paul H. Seay. Manager Seay joined Royal as a salesman at Little Rock, Ark., in April, 1940. He was transferred to Houston in August, 1945.

In the New York City office, former Fort Wayne Manager N. M. Quist and former New York Salesman L. H. Siemering have been appointed Group Managers, effective April 1, under New York District Manager J. H. Forshay.

To replace Manager Quist at Fort Wayne, Royal has decided upon John Camp whose entire career with the Company has been spent selling typewriters at Fort Wayne.

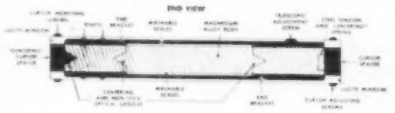
OLD TOWN APPOINTS NORTHWESTERN SALES MANAGER

Alvin A. Reitman

Alvin A. Reitman has been names Northwestern Sales Manager for the Old Town Ribbon & Carbon Co., Inc., Brooklyn, N. Y. Mr. Reitman will maintain headquarters in the Seattle, Washington area.

Old Town also announces the appointment of Theodor T. Brush, James D. Michelson and Allen Topping as sales representatives in the New York Metropolitan area.

ALL-METAL SLIDE RULE



The accompanying illustration shows cross section of climate-proof, plastic covered magnesium-alloy slide rule known as the Ortho-Phase Log slide rule, announced by Pickett & Eckel, Inc., 1111 South Fremont Ave., Alhambra, Calif. In addition to all-metal construction, features include precision manufacture to .001-inch tolerance, cursor window kept away from scale surface by cursor "centering groove" and spring channel, precision adjusting screws, non-sticking slider, and non-fade scales unaffected by grease, oil, handling or cleaning.

(*Please turn to page* 226)

YOU WILL FIND NEW SUPPLY-SOURCES LISTED EVERY MONTH IN PURCHASING'S CLASSIFIED SECTION! SEE PAGE 358

"...Why do I prefer SoundScriber?"

"I'm glad you asked, because for years I've resisted Machine Dictation!

"But with SOUNDSCRIBER? . . . why it's as easy and natural as listening to the Boss's voice *in person.* SOUNDSCRIBER records with such life-like clarity that 'listening strain,' so common in conventional dictation machines, just doesn't exist. It's so simple to operate; the discs are so easy to handle that it saves *hours* of time and trouble for me!

"*Of course* the Boss is keen about SOUNDSCRIBER, too... gets twice the work done, with half the effort. He never needs to interrupt *my* important work. His letters, telegrams, memos... yes, even his *telephone conversations* are recorded by SOUNDSCRIBER. *And* . . . he says that SOUNDSCRIBER has made me a *better secretary* . . . more valuable to him. Now we're a perfect team.

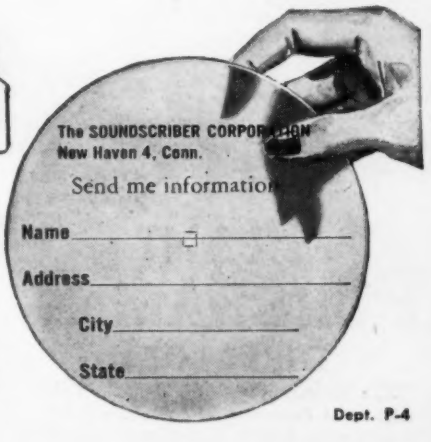
"Best of all . . . with SOUNDSCRIBER *my* business day ends at quitting time. If the Boss has after-hours work . . . SOUNDSCRIBER does it.

"Take a tip from a girl who knows; have that SOUNDSCRIBER man see *your* Boss!"

SoundScriber discs hold up to 30 minutes of dictation—are easily indexed, routed, filed or mailed. Radio-clear quality insures accurate transcription. Low first cost, lower operating cost.

SOUNDSCRIBER
Trade Mark
ELECTRONIC DICTATING AND RECORDING EQUIPMENT

To find out how SoundScriber applies to *your* business, phone the nearest distributor, listed under "SoundScriber" in your classified telephone directory. Or mail the coupon.



Where to get

NEW ITEMS— NEW SOURCES OF SUPPLY... quick

A specialized buying directory designed and built for production, purchasing and engineering executives—to assist them, in the easiest manner, to secure sources of supply for all equipment, products or supplies used by industry.

Compact, complete and yet easy to handle—that's PLANT PURCHASING DIRECTORY.

Five separate sections make up this directory—A CLASSIFIED SECTION, containing the names and addresses of manufacturers classified by product—A TRADE NAME SECTION, listing alphabetically the trade name of the product with name and address of the manufacturer—An ADDRESS SECTION, giving the names and addresses of American manufacturers—A CHEMICAL SECTION, listing by product the name and address of important manufacturers—A MECHANICAL DATA SECTION, giving 34 pages of helpful tables, formulas, etc.

Use PLANT PURCHASING DIRECTORY! You'll really like it.

If by chance you haven't a copy, write us. We want every industrial buyer to have the benefits of this handy purchasing reference.

Incidentally, mentioning PLANT PURCHASING DIRECTORY, when sending out inquiries, means much in helping to increase our service to you.

Reach for ➡ Keep it Handy

PLANT PURCHASING DIRECTORY

333 N. Michigan Ave., Chicago 1, Ill.

A Conover-Mast Publication

EDIPHONE MARKETS NEW STEEL HEARING TUBE

A new lightweight hearing tube which should add considerably to the comfort of operators transcribing dictating machine cylinders, is being marketed by the Ediphone Division, Thomas A. Edison, Inc., West Orange, N. J. The headpiece assembly uses a Neoprene tubing only slightly more than half the size of the old and it is

The headpiece assembly uses a small neoprene tubing.

said to offer much less resistance to head movement. The small diameter Neoprene tubing, Ediphone points out, is not only stronger than wires, but drapes itself readily and is not likely to snarl, catch and come apart, especially on the typewriter keys. The hearing tube is designed for use with electronic or good average accoustical recordings.

UTILITY STANDS HAVE HARDWOOD TOPS

A line of utility stands with hardwood tops, known as the Monarch No. 1418, is announced by Maso Steel Products, 500 South Throop St., Chicago, Ill. Other features include elbow type of drop leaf arm, and 1⅝" composition casters. Hinges

The stands have elbow type of dropleaf.

are of the continuous piano type; legs are of one inch tubular steel. Overall the Monarch measures 14½" x 36" x 27" high, with two nine inch drop leaves. Two finishes are available—oak finish top with green baked enamel legs, and walnut finish top with walnut baked enamel legs.

L. T. CARR MADE SALES MANAGER FOR MARCHANT

Leslie T. Carr has been named National Sales Manager of Marchant Calculating Machine Company with supervision over sales policies and field personnel, according to Edgar B. Jessup, President. Mr. Carr formerly was Sales Promotion Manager.

A veteran of the Marchant selling organization, Mr. Carr has been with the company more than 12 years. He was brought to the home office a year ago after an outstanding record in the field, first as a salesman in Honolulu, later as an agency manager at Oklahoma City and then at St. Louis, where for six years he was in charge of one of the largest district offices.

MEASURING DISPENSER FOR PRESSURE SENSITIVE TAPE

Illustrated is the automatic measuring dispenser for pressure sensitive tape, known as Big Inch No. 2 and manufactured by Better Packages, Inc., Shelton, Conn. The unit is engineered to dispense 2" strips. Both ends of the exposed strip adhere to the reel until the strip is picked up by the operator, thereby preventing snarling and mis-sticking of the tape. Cut-off is manual.

The dispenser occupies a space of less than 5" x 8". It can be operated with pressure sensitive tapes of cellophane, acetate, plastic or light paper in widths up to 1". It takes tape rolls up to 4¾" in diameter on 3" cores.

NORDBERG NAMED GENERAL SALES MANAGER FOR PITNEY-BOWES

Harry M. Nordberg, manager of postage meter sales for Pitney-Bowes, Inc., Stamford, Conn., has been appointed general sales manager, Wilbur R. Greenwood, vice president for sales and service, announced recently. He will direct domestic sales of the company's full line of mailing and office machines.

Mr. Nordberg joined Pitney-Bowes as a salesman at Kansas City in 1934, served as branch manager there and at Minneapolis, became regional sales manager for the Central states, and was called to Stamford in 1944 to direct national sales of PB's metered mail machines.

He is chairman of the Office Equipment Manufacturers Institute's market research committee.

GIVES MORE ACCURATE CONTROL OVER PURCHASING

A new motor-driven business management machine that is said to permit more efficient, more accurate control over production, inventory, purchasing and other plant operations, known as the Chart-O-Matic, is being introduced by the Spiral Manufacturing Corp., 3612 N. Kilbourn Ave., Chicago 41, Ill.

The new machine consists of a graph chart on rollers, driven by an electric motor. Finger-tip control permits the chart to be rotated in either direction at variable speeds. Chart can be stopped in any position.

All operating data, such as stock on hand, material on order, incoming supplies, completed units, shipments, etc., are posted on the chart. By simply rotating the chart the entire activities of the plant are shown at a glance.

According to the manufacturer, the device gives an accurate, immediate visual record of work in progress, units completed, shipments, absenteeism, etc. It also serves as a guide for the purchasing department by giving a constant picture of stock on hand, stock on order, parts required, material received, helps to avoid inventory surpluses, and averts production delays due to parts shortages.

Machine has capacity of up to 2000 separate items which can be posted in quantities from one to a million. The entire unit is contained in metal cabinet, finished in black crackle enamel with chrome trim. The overall size is 36½" long, 13¾" deep, 11" high; weighs 84 pounds. Printed matter available.

CORD RETRACTS TO ONE FOOT

The Connecticut Telephone & Electric Division of Great American Industries, Meriden, Conn., is offering Koiled Kords as standard equipment on the Connecticut #1000 series desk and wall telephones. Koiled Kords are claimed to last longer than ordinary fabric covered cords; they are spring-like in appearance and extend to approximately five times their retracted length without effort. With the handset on the base the cord is retracted to approximately one foot of neatly coiled wire. The series #1000 desk telephone is easily converted from a manual to a dial type telephone. The housing is Tenite cellulose acetate plastic. A convenient hand-lift is incorporated in rear of the handset cradle.

Koiled Kord retracts to approximately one foot of coiled wire.

NON-CURLING CARBON TISSUE

The new sheets handle with ease.

New carbon paper coated with Vinylite plastic is being made by the Neidich Process Division of Underwood Corporation, New York, N. Y. The plastic coating imparts qualities of improved moisture resistance and flexibility, and faster insertion and extraction of the sheets are simplified for the user because of the non-curling qualities. The strength of the tissue has been increased over one-third the value of ordinary tissue.

TRAINING COURSE ON STATISTICAL QUALITY CONTROL

A manual outlining a short, intensive training course in statistical quality control, designed for the instruction of managerial personnel in manufacturing firms, is now on sale in printed form by the Office of Technical Services, Department of Commerce, Washington, D. C. The manual (PB 17522), "Manual for an Introduction to Statistical Methods of Quality Control in Industry", mimeographed, 79 pages, sells for $2.00.

The course outline which is arranged for seven-day training period, is divided into five general topic groups as follows:

(1) Elementary principles of control charts used for measurements, including purposes and uses of control charts; calculating methods; fundamental theories involved; and verification of control chart principles.

(2) Control charts for fraction defectives and for a number of defectives, including the construction of the charts; calculating control limits; binominal distribution; and significance of sample size.

(3) Improvement of sensitivity of control charts, determination of standard values, adaptations needed in case of tool wear, and appraising processes by means of control charts.

(4) Use of control charts for measuring the number of defects per unit, including techniques of construction, breadth of applicability, and the Poisson distribution.

(5) Quality Assurance, devoted to practical considerations leading to acceptance or rejection; lot quality protection; average quality protection; use of standard sampling tables, and applicability of control charts.

The five topics are outlined in detail by class periods for the seven days. Sample charts, graphs, and record sheets are included.

(*Please turn to page* 228)

No Scuffing
No Smudging
When you use
Millers Falls
EZERASE
THE NEW, PATENTED PAPER FOR QUICK, CLEAN, ERASING
With an ordinary pencil eraser mistakes in typing can be quickly erased without leaving telltale unsightly marks or smudges. For Ezerase has a new, patented surface that works like magic!
WRITE TO-DAY

for a sample book of test sheets in all weights. Make a test and see for yourself!
MILLERS FALLS PAPER CO.
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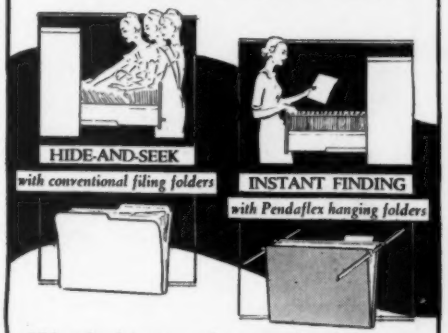
Same pay-but MILES APART *in* FILING SPEED!


Hide and seek is an expensive game—when played in your filing cabinets.
Pendaflex hanging folders change it from hide and seek to "I spy!"
You *see* every Pendaflex folder tab the moment you pull open the drawer.
You are enjoying the world's fastest, easiest filing method, and it's going to *knock down filing department costs 20%.*
Oxford PENDAFLEX
*Reg. U.S. Pat. Off.
HANGING FOLDERS
Send Coupon
Oxford Filing Supply Co., Inc.
350 Morgan Avenue, Brooklyn 6, N. Y.
Please send your catalog on Pendaflex filing, and name of nearest dealer.
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*Address*_____
*Individual*_____

Redifixt 1948

W-2

Withholding Tax Forms

Best of all for YOU! Federal, State and Social Security all in one swift operation. Send for new samples and our schedule of prices.

E-Z DIAL TAX FINDER

SS1B Federal Forms
Employees W-4 Forms on Card
Kraft W-2 Window Envelopes

We also manufacture all types of continuous and REDIFIXT One-time carbon forms, on the latest post war Rotary Equipment.

WRITE FOR DETAILS
ON YOUR LETTERHEAD

CONSOLIDATED
Business Systems, Inc.

Dept. 006
30 Vesey Street New York City 7

SAMPLE CASES . . . BRIEF CASES

ALL of our Cases are made of HEAVY GAUGE TOP GRAIN COWHIDE . . . FULLY REENFORCED.

Stock Sizes:
16 x 6 x 11"
18 x 7 x 12"
20 x 7 x 13"

Colors:
Black and Brown

Buy Direct and Save!

Stock Sizes:
16 x 12"
18 x 13"
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Colors:
Suntan
Black
Brown

We are experts in designing ALL types of SAMPLE CASES and BRIEF CASES to suit YOUR needs!

We also manufacture a complete line of Ring Binders . . . Portfolios . . . Envelope Cases and Mail Bags. Many sizes in stock. Also made to your specifications.

Write for our Catalogue

ALLIED BRIEF CASE CO., DEPT. P
186 Fifth Ave. Sotisfaction Entr. 23rd St.
New York 10, N.Y. Guaranteed GR 3-2302

(*Continued from page 227*)

Twelve corollary reports, summarizing the wartime experiences of representative firms with quality control are also available from O.T.S. The twelve reports are sold as a set (PB-27165, Quality Control Reports Nos. 1-12, mimeographed) for $2.00.

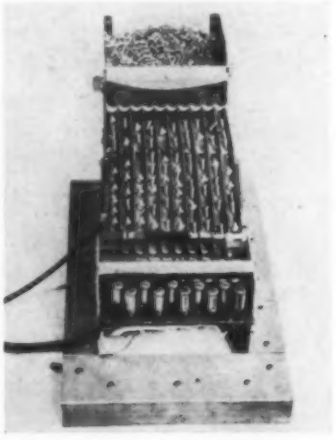
Two other related reports are also available from O.T.S.: PB-39492, (Quality Control at Picatinny Arsenal); 263-page account of the basic principles and procedures used at Picatinny Arsenal, Dover, N. J., during the war. The report is available in photostat form at $18 a copy, and in microfilm at $6.

PB-39493 (Quality control through sampling inspection) is an extract from PB 39492, referred to above. Photostat copies of the 46-page report are $4; microfilm copies $1.

Orders for reports should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D. C., and should be accompanied by check or money order payable to the Treasurer of the United States.

PHOTOELECTRIC COUNTING SYSTEM COUNTS WITH TEN "EYES"

New count detection system for counting small parts at high speed for packaging and inventory, which employs ten separate photoelectric detectors operating in parallel and connected to high speed counter, has been developed by the Potter Instrument Co., 136 Roosevelt Ave., Flushing, N. Y.



With this system a count of absolute accuracy can be either totalized or predetermined.

The company claims that the system will provide high speed predetermined counts of absolute accuracy. The electronic counter will register the count of each part even though ten parts fall past the ten photoelectric detectors at the same instant. Since the counting system is completely electronic any desired counting rate can be supplied. The instruments can be readily applied to completely automatic packaging processes.

SEE CLASSIFIED SECTION
PAGE 358

ROYAL INTRODUCES NEW PORTABLE TYPEWRITER

A portable typewriter with many revolutionary features, has been introduced by the Royal Typewriter Company. Outstanding among various innovations and inbuilt improvements are the *Finger Form Keys*, *Speed Spacer*, and *Rapid Ribbon Changer*.

The key design follows finger contour.

The Finger Form Keys represent a completely new concept of key shape. The keys are constructed scientifically to follow finger contours and give greater finger clearance thereby bringing new comfort and accuracy to typing.

The new Speed Spacer is a space bar built right into the frame. This feature eliminates the hurdling which formerly impeded spacing action and affords broader error-proof striking surface.

The new Rapid Ribbon Changer is a device designed to take needless work and confusion out of ribbon changing.

Two models are available; the Quiet De Luxe and the Arrow, in two-tone gray and black finish.

TECHNICAL BOOK CATALOG FOR 1948 PUBLISHED

The Chemical Publishing Co., Inc., 26 Court St., Brooklyn 2, N. Y., has published a new, 1948 catalog containing information of the latest books on chemistry, technology, petroleum, medicine, foods, engineering, metals, technical dictionaries, etc. Date of publication, price, number of pages, detailed description and full table of contents for each book are included. Copies of the catalog will be sent without charge on request to the company.

SHOWS HOW TO ATTACK RISING BREAK-EVEN POINTS

Checking or reversing the sharp and still continuing rise in break-even points is of direct concern to every business. Sixteen practical lines of attack on break-even points through methods of reducing costs and increasing production are outlined in a new, illustrated brochure available from Remington Rand Inc. These are specific, tested procedures that are based on case history experiences of successful operations. They include suggestions that can be adopted directly or adapted to fit special requirements of manufacturing, purchasing, planning and scheduling, and stores departments of large and small companies alike. They are realistic attacks on rising

break-even points through effective, down-to-earth methods of avoiding production delays and forestalling bottlenecks that raise break-even points unnecessarily.

Copies of this brochure KD 367 can be obtained from any office of Remington Rand or by writing to Systems and Methods Research Department, Remington Rand Inc., 315 Fourth Avenue, N. Y. 10, N. Y.

NEW AIR EXPRESS TARIFF BETWEEN U. S. AND CANADA

Numerous reductions in international air express rates applying between the United States and Canada are announced by the Air Express Division of Railway Express Agency. The reduced rates are published in a newly-issued tariff (C.A.B. No. 67, International Air Express Tariff No. 3). They reflect shortened airline distances between a number of points in the U. S. and Canada, due to extension of certificated air line routes and consequent recomputations of air mileage, the agency said.

Direct air express service between Canadian points and Havana, Cuba, via Miami also has been provided for in the new international tariff. This has been accomplished by the adoption of through air service covered by a single air express receipt, with consequent simplification in computation of rates and charges, the agency said.

Publication of the new international tariff provides direct international air express service between more than 1,000 air express offices in the U. S., 31 in Canada, two in Newfoundland, and Havana, Cuba, with simplification of documentary requirements. The express agency estimated that savings of about 10 per cent will be passed on to the shipping public in reduced rates, which include special commodity rates for shipments of newspaper, magazines and other periodicals, when flown between U. S. and Canadian cities.

VINYLITE BUSINESS MACHINE COVERS

The material will not crack or peel.

Compactness is one of the outstanding features of Bell-Vue business machine covers made from Bakelite black Vinylite plastic sheeting by the Budlew Products Company, Chicago, Ill.. The covers fold to a very small size when not in use; they are waterproof, dustproof, nonflammable, and resistant to inks, oils and mildew, and will not crack or peel. They are made for all types of business machines, electric fans, etc.

(*Please turn to page* 230)

MacRae's Blue Book

The Complete Buying Guide for Every Industrial Product

Handy

Efficient

More Accessible

•

More Manageable

all in one book

For advertising rates call your agency or write to MacRAE'S BLUE BOOK COMPANY

18 E. Huron St., Chicago, Ill.

USE FORMS THAT CAN *"take it!"*

—forms that stay clear and legible—that won't crack up under continued use. Ask your printer about this first requisite for business forms. He's an expert. And he'll tell you why "Rising is right for the job"!

Rising Bond

✓ 25% rag ✓ white and 5 colors
✓ envelopes in 6 sizes ✓ 4 weights
✓ excellent printing surface for engraving, lithography, gravure or letterpress

WHEN YOU WANT TO KNOW . . . GO TO AN EXPERT!

Rising Papers

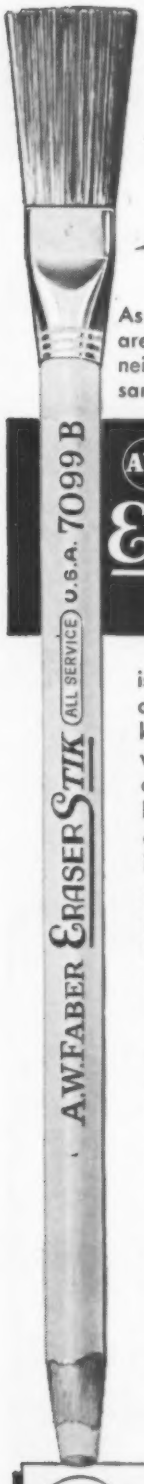
ASK YOUR PRINTER . . . HE KNOWS PAPER!

Rising Paper Company, Housatonic, Mass.

As a rule, Purchasing Agents are not "coupon clippers" . . . neither is it our policy to send samples, but . . .

A.W. FABER-CASTELL

ERASERSTIK



is so important to the efficiency of your typists, clerks, bookkeepers and executives, that we will gladly send you one of our wood-encased eraser beauties so you can test it for every erasing need—pencil, ink or typewriting.

EraserStik is the *modern* way to erase. Sharpen it with knife or mechanical sharpener and in seconds you have fresh, clean eraser stock. EraserStik gets into tight places, erasing one letter of a word without smearing surrounding area. Fewer letters need re-typing when EraserStik is used. Write today for free sample.

7099 without brush **10c**
7099B with brush . . . **15c**

a trifling cost for greater office efficiency.

THE FIRST, THE ORIGINAL, THE GENUINE WOOD-ENCASED ERASER.

A.W. FABER-CASTELL PENCIL COMPANY INC., NEWARK 4, N.J.

PYRENE COMPANY RECALLS 500,000 EXTINGUISHERS

Pyrene Manufacturing Company, Newark, N. J., has begun calling in more than a half million of its hand fire extinguishers, all of the vaporizing liquid pump type. The move was made following discovery that a corrosive in the extinguisher fluid supplied to the company by an outside manufacturer has severly damaged some of the extinguishers and would probably affect others in time.

The company has stated that the extinguishers—which are quart and 1½ quart sizes with the exception of a small number of pint size—would be replaced as soon as possible, but pointed out that all replacements could not be made at once. The recalled extinguishers are most in industry and commerce, scattered throughout the country. The company is trying to retrieve extinguishers carrying Underwriters' Laboratories numbers on their metal labels as shown on the accompanying list.

Some extinguishers listed below were rebuilt recently and should not be returned. They are stamped around the outlet nozzle with the symbols A-48, B-48, etc. to L-48 or the letter X.

Owners are asked to examine their extinguishers closely and if they are in the affected groups and not among the exceptions to return them to the place of purchase or to the Pyrene Manufacturing Company, Department RX, No. 10 Empire Street, Newark 5, New Jersey.

Since there are no identifying serial numbers on Pyrene 1-pint extinguishers, it is requested that these be returned to the above address for testing and replacement if necessary. Also, all Pyrene Fire Extinguisher Liquid (Refills) purchased from any source prior to January 1, 1948 should be returned for replacement. But the refills should be shipped on a separate bill of lading to another Pyrene Manufacturing Company address—560 Belmont Ave., Newark 8, N. J.

1½-QUART EXTINGUISHERS

150781 to 150900
235486 to 235530
236731 to 237230
403106 to 404730
411998 to 414430
416631 to 419830
419931 to 449230
449631 to 458930
460931 to 461230
461331 to 478330
480481 to 494480
497631 to 504630
505631 to 509630
510256 to 518255
520356 to 520955
532356 to 533748
539856 to 544312

1-QUART EXTINGUISHERS

R689558 to R689997
R692644 to R693497
R731288 to R732363
R751698 to R753697
T334495 to T380550
T398671 to T485550
T583.51 to T585050
T585551 to T601200
T601801 to T676150
T676251 to T680483
T680651 to T711650
T712151 to T702150
T793151 to T843750
T844550 to T845050
T846551 to T853350
T854051 to T854700
T861051 to T906880
T911051 to T976216
T977051 to T999999
U2 to U27050
U33051 to U33990
U37651 to U38784
U64651 to U79650
U80151 to U100150
U150151 to U152552

FOLDING CHAIRS

High finish eliminates hazard of snagging clothes or stockings.

Imported Polish folding chairs are announced by the Adirondack Chair Co., 1140 Broadway, New York, N. Y. The chairs are flat-folding, non-tipping, easy to carry, and simple to stack and store. They are constructed of hardwoods, polished to a smooth, satiny, piano-finish.

ENAMELED SANITARY WARE COMMERCIAL STANDARD

The Commercial Standard for Formed Metal Porcelain Enameled Sanitary Ware, CS144-47, which records standard practices widely endorsed by the trade, is now available according to an announcement by the National Bureau of Standards. Copies may be obtained for ten cents each from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

COLOR SYSTEM GUIDE FOR INDUSTRY AND BUSINESS

Purchasing agents, office managers and buyers are being offered, without charge, a "Color Systems In Business" guide, recently developed by the Eberhard Faber Pencil Co. A veritable "idea-finder", the guide suggests many new color systems designed to step up efficiency, speed paper work and cut down paper work.

The guide, made in handy slide form, is the result of extensive research conducted by the company covering office systems in

(*Please turn to page* 232)

On the trail of crude oil in Louisiana swamplands

come out, come out, wherever you are

• And to get crude oil out, *profitably*, management keeps a sharp eye out for ways to cut costs. That eye falls happily, these days, on Moore business forms. For, while office overhead streaks up and up, these multi-copy forms slice waste, boost output for businesses large and small.

The Atlantic Refining Company, Philadelphia, uses Moore cost-cutting tabulating forms to secure speedy, accurate control. The Humble Oil and Refining Company, Houston, Texas, uses Moore business forms. Your firm, too, can shave operating costs and get airtight control. Just call your local Moore office for proof and money-saving details.

Sales offices in over 200 cities from coast to coast, ready to serve you swiftly. There are Moore factories in Niagara Falls and Elmira, N. Y.; Minneapolis, Minn.; Denton, Texas; Los Angeles and Emeryville, Calif. Also sales offices and factories across Canada.

MOORE BUSINESS FORMS, INC.

SALESBOOK SPEEDISET CONTINUOUS FANFOLD FLATPAKIT

Prominent Users of Strathmore Letterhead Papers, No. 76 of a Series

Discerning, smart, Saks Fifth Avenue

picks **STRATHMORE**

for its letterhead

In every last detail, Saks Fifth Avenue expresses the taste and discrimination of an establishment that serves a distinguished clientele. With considered judgment it chooses to write all communications from its executive offices on Strathmore. The very look of the letter gives the recipient a feeling that whatever comes from Saks Fifth Avenue must be right.

All over America firms with fine reputations to maintain express the character of their houses with Strathmore Letterhead Papers. Does your letterhead paper do your company full justice? If it leaves something to be desired. ask your printer to show you samples of Strathmore papers.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Bond.

STRATHMORE *MAKERS OF FINE PAPERS*

Strathmore Paper Company, West Springfield, Massachusetts

(*Continued from page* 230)

scores of major industries. Twenty-two business and industrial classifications and 6 departmental uses are shown. Requests should be made to the company at 37 Greenpoint Avenue, Brooklyn 22, N. Y.

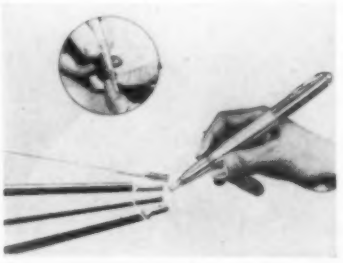
UTILITY CHECKING STAND

The accompanying illustration shows new utility checking stand manufactured by the Perfection Products Co., 6747 S. Wentworth Ave., Chicago 21, Ill. Tradenamed Exacto the stand is recommended for use in offices, shipping departments, delivery and receiving platforms and any place where it may be necessary to carry records from one place to another for checking,

The top is of good writing height and angle for average standing worker

filing, etc. The stand is light enough to enable any one to glide or roll it over an office or shop floor. The stand is made of 1⅛" steel tubing in one piece. The top is of ½ inch tempered Masonite, and contains a ring binder for holding punched invoices or forms and a spring steel clip for a pad of note paper or other record. It is available with or without casters.

FINE AND BROAD LINE MARKING INSTRUMENT



This automatic valve controlled pocket fountain brush for marking, drawing and writing on any surface produces a very fine or broad line by use of a special adapter and four interchangeable hard felt nibs. It can be used for pricing and marking on surfaces such as cellophane, metal foil, wax surfaces, and fabrics, with a choice of eight transparent instant-drying colored inks. Manufactured by Cushman and Denison Manufacturing Co., 135 West 23rd Street, New York 11, N. Y.

(*Please turn to page* 234)

What's the Life Expectancy of these wood chairs and desks you want to buy for my department?

Gene: Forty-five, fifty years—more than you'll ever use them.

V-Pres. in Chg. of Actuaries: Humph . . . now look here, Gene, I don't want to tell you how to be a purchasing agent . . . but are you sure wood is *durable* enough?

Gene: Do you know how long you've had the wood office furniture that's in there now?

V-Pres.: Oh, ten, eleven years.

Gene: Recalculate, A. J., you dropped a decimal somewhere. That museum group was purchased in 1921. It's been well over ten years since it was written off the books. And it will last another twenty years. . . .

V-Pres.: Not in my department, it won't. It's obsolete. Take it away. Get rid of it. Wastes too much room.

Gene: That's what I'm trying to do. But I want to replace it with the best, most modern, most efficient furniture on the market. That's wood, I'm convinced . . . and you give me this "durable enough" talk. Seems to me, last time Lois and I came out to your home, you were showing me a fine old Chippendale table.

V-Pres.: Sure was. Beauty, isn't it?

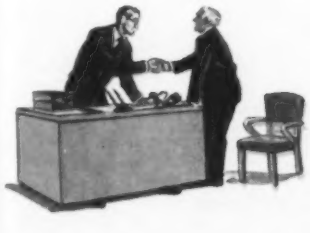
Gene: Oh, definitely. How old would you say it is?

V-Pres.: Around 180 years.

Gene: Wood, isn't it?

V-Pres.: Oh, oh . . . I think I see what you mean. Okay, Gene, where's my new *wood* office furniture?

See your office equipment dealer for handsome, efficient, durable wood office furniture.



Wood OFFICE FURNITURE *Institute*

America's progressive manufacturers of commercial desks and chairs . . . cooperating in product improvement . . . in the interest of greater office comfort, beauty, morale.

Their symbol is your guarantee of satisfaction!

NEW INDUSTRIAL SERVICE FOR MANUFACTURERS AND SUB-CONTRACTORS

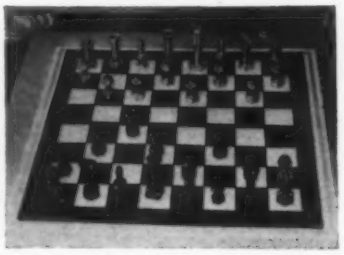
The National Industrial Chamber, of New York City, has developed a procedure for placing manufacturers in touch with sub-contractors who have available machinery for the job within 48 hours. Leaving final settlement of the contract to the principals, the group charges fees on a scale graduated downward from a general figure of 3% for its service in bringing buyer and seller together. The service is free to the purchaser, fees being paid by the seller.

The plan introduces a new technique to the problems of purchasing and procurement. It developed naturally out of war contract and sub-contracting methods and the increasing need of manufacturers for a quick way to find sub-contractors able and anxious to procure parts, incorporating new styles, new materials, or other changes improving sales appeal or lowering cost.

In the rush to meet normal, competitive market demands, manufacturers have been harassed by the difficulties of finding sub-contractors with open facilities available to do the work. Regular vendors have been overloaded with business or have been unable to adapt to new trade and customer requirements. Sensing the opportunity created by this problem, Nelson Burt, Francis F. Brooks and Don J. Brokaw organized the National Industrial Chamber as a clearing house for such contracts; with Burt as president; Brooks vice-president; and Brokaw, secretary-treasurer. The firm operates much as an employment agency does, but handling orders for contract work instead of jobs.

The company now has in its files around 800 contractors whose facilities are open for work in fields such as metal machining and fabrication, woodworking and plastics. It operates a force of 20 salesmen in leading cities east of the Mississippi who locate both the manufacturers wanting to place work and contractors with open facilities.

NOVEL CHESS MEN



This indestructible set of chess men, one force wearing electro-galvanized "armor" and the other the standard black finish, is composed entirely of steel fasteners made by the Oliver Iron and Steel Corporation, Pittsburgh.

The Pawn is a Washer Head Bolt with Hexagon nut; the Castle, a Steering Knuckle Stop Screw with double Castellated nut assembly; the Knight, a Shock Absorber Bolt with a Hexagon nut; the Bishop, a Collar Bolt with Hexagon Jam nut; the Queen, a Short Square Plow Bolt with Square nut; the King, a Wheelbolt with Hexagon Jam nut.

THIRD ANNUAL INDUSTRIAL PACKAGING AND HANDLING EXPOSITION

The Third Annual Industrial Packaging and Materials Handling Exposition, sponsored and produced by the Industrial Packaging Engineers Association, will be held at Chicago, October 5 through 7, 1948, according to an announcement by A. C. McGeath of the American Box Board Co., who has been re-appointed as general chairman.

Hotel Sherman will again be the site have been made to provide more exhibit for the Third Exposition. Arrangements space than was available last year. At the last exposition over 6,000 persons viewed the many exhibits of materials handling and packaging supplies and equipment, and it is anticipated that some 10,000 persons will attend the Third Exposition.

The Forum will again be repeated, and the Protective Packaging Contest has been expanded and will feature awards in various classifications of protective packaging. It is contemplated that a Materials Handling award will be inaugurated at the Evposition.

Further information may be had by writing to the Industrial Packaging Engineers Association, 20 W. Jackson Blvd., Chicago 4, Ill.

Here is a new edition of our well known booklet... of special interest to those of your customers contemplating the purchase of a diamond.

Sent on request... Address Department D

L. & C. MAYERS CO.

Diamond Merchants since 1912

545 FIFTH AVENUE, NEW YORK 17, N.Y.

When you buy staples....

.... Look for the name

Hotchkiss

Hotchkiss chisel-pointed staples are made of exactly the right gauge wire to exact dimensions. They improve office efficiency because they penetrate easier and they improve the operation of any stapler they are made to serve.

Insist on Genuine Hotchkiss staples. They are sold by leading stationers all over the world.

THE E.H. *Hotchkiss* COMPANY

NORWALK • CONNECTICUT

"Pioneers in all that's best in stapling"

HERE'S NEWS you can't afford to miss!

AS APPEARING IN APRIL 13th ISSUE OF

And here's the PROOF...

PAGE 8

SUBJECT: Pencil Point–Sharpness

TEST NO. 34

LABORATORY REPORT

EBERHARD FABER
BUREAU OF STANDARDS

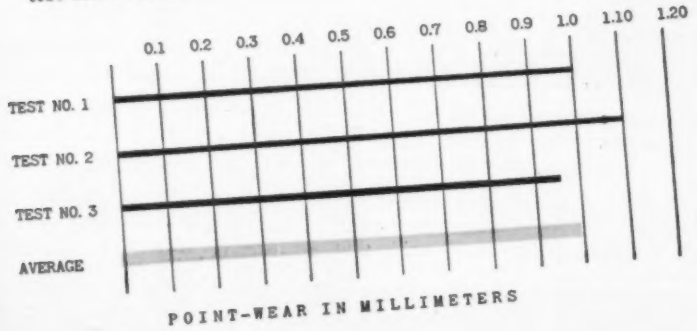
Date of Test . . 11/24/47 . . .
Technician Conducting Test . WS . .
Checked by . . . AS . . . . .
Brand of Pencil Tested Mongol .

Description of Test—Tests were made of every well-known pencil in the Mongol price range. In each case the same designated degree was used.

The leads were machine-sharpened, and were microscopically checked to insure identical test conditions.

Each pencil drew a 151.3 foot spiral line under a uniform pressure at a fixed-speed. Each pencil was firmly clamped at the pencil-to-paper writing angle most commonly used.

The point was measured with a .001" accuracy indicator before and after completing the spiral. Several complete tests were run on each point. The bar-graph below shows the results of the individual tests as well as the averaged test-wear of pencil "G".



(1 millimeter=.039+")

Typical Page from LABORATORY REPORT

MONGOL STAYS SHARPER LONGER*

EBERHARD FABER U.S.A. 482 – №2

SCIENTIFIC LABORATORY TESTS conclusively prove point-sharpness superiority for Mongol's exclusive Complastic Lead—over the average of all well-known pencils in the Mongol price range—by 29%.

*A GOOD POINT TO REMEMBER

EBERHARD FABER

LEADERSHIP IN FINE WRITING MATERIALS for 99 years

TRADE MARKS REG. U.S. PAT. OFF.

Among the ASSOCIATIONS

Harold I. Patten, executive secretary, Philadelphia Assn.; T. H. Garrison, national director, Lehigh Valley Assn.; W. R. Simmons, national director, Elmira Assn.; Harold H. Frair, president, P.A.A. of Eastern New York; Stuart F. Heinritz, editor, *Purchasing* Magazine; Clarence J. Miller, president, Philadelphia Association; and Benedict Van Voorhis, national director, New York Association.

1000 At New York Association's Purchasing-Sales Dinner

Philip D. Reed, Chairman of the Board, General Electric Company, Speaks on European Recovery Program In War-to-the-Finish of Ideologies

Approximately 1000 persons attended the Annual Purchasing-Sales Dinner sponsored by the Purchasing Agents Association of New York, which was held in the Grand Ball Room of the Hotel Commodore, Wednesday, February 25. The principal speaker of the evening was Philip D. Reed, chairman of the board of the General Electric Company, who voiced his views on the European Recovery Program.

The dinner was the occasion of an official visit by President Garnet T. Dickson and Secretary-Treasurer George A. Renard, of the National Association of Purchasing Agents, both of whom spoke briefly and pertinently preceding Mr. Reed.

President David M. Meeker of the New York Association, presided, first introducing President Dickson of the National. Mr. Dickson in the course of a short talk said that the National Association is growing fast and now has a total membership of 11,242 and that the field offered more than 33,000 prospects, "so there is still a job to be done." He defined public relations as action intended to develop good will and confidence in a cause or an enterprise, saying that purchasing agents have the best opportunity of any one in their respective organizations to do that very thing. "We should take advantage of it", he said. "Not only should we know other members of our association but we should really know the representatives of our vendors."

The next speaker was Secretary Renard of the National Association, who was followed by Mr. Reed. Commenting upon economic conditions, Mr. Reed said, that "according to statistics we are doing very well indeed. The only exception is the unsound increase in our prices. Personally I believe we have come very close to the top. The die will be cast and we will know more about it within the next 60 to 90 days. That

(*Please turn to page* 238)

Speakers at the New York Sales Dinner. President Garnet T. Dickson of National Association, Philip D. Reed, Chairman of the Board, General Electric Co., and George A. Renard, Secretary-Treasurer of the National Association.

Harold W. Macintosh, vice president, 8th District; Clifton E. Mack, national director, Washington, D. C.; Edward B. Fielis, Treasurer, P.A.A. of N.Y.; Vincent D. Bates, president, Elmira Assn.; Wm. F. Diehl, president, Lehigh Valley Assn.; G. Howard Ahl, vice president P.A.A. of N.Y.; and J. H. Leonard, executive secretary, New York Association.

GOULD RESEARCH MEANS BETTER BATTERIES —NOW

Another way you profit from the GREATER GOULD*

The most complete storage battery research laboratory in the United States is the Gould laboratory at Depew, N.Y. Equipment that only Gould has takes guesswork out of material and plant control, and brings answers to field problems in a fraction of the time formerly needed. Gould is building better batteries today—and from Gould will come the "Battery of Tomorrow."

The Greater Gould brings profit to you in better service and dual plant facilities. But in no way do you profit more than from the exclusive research facilities of Gould—already the "Choice of Engineers."

*The Storage Battery Division of Philco Corporation was merged with the Gould Storage Battery Corporation on June 28, 1947. The consolidated organizations are operating under the name of Gould.

Always use Gould automobile and truck batteries

GOULD "Thirty" and KATHANODE **BATTERIES**

Gould Storage Battery Corporation
TRENTON, NEW JERSEY

Norman O. Aeby, director of purchases, Johns-Manville Corp.; Thomas W. Harris, director of purchasing, E. I. duPont de Nemours & Co.; George A. Renard, secretary-treasurer, N.A.P.A.; Philip D. Reed, chairman of board, General Electric Co.; W. R. Simmons, Apparatus Dept., G. E. Co.; and Harry L. Erlicher, vice president in charge of purchasing, General Electric Co.

Harvey C. Hopkins, director of purchases, American Can Co., New York; Thomas W. Harris, director of purchases, E. I. duPont de Nemours & Co., Wilmington, Del.; A. J. Kelly, general purchasing agent, Esso Standard Oil Company; Stanley W. MacKenzie, director of Purchases, United States Rubber Co., New York.

(*Continued from page 236*)

is our major problem in America. It is not a problem that we will fail to get on top of. It is not a problem that calls for thinking of government controls.

"In 1942 I went abroad and spent two of the most exciting years of my life in England and on the continent. It is an experience I wish all of you could have had. It did things to my point of view. It did things to my interest and to my consciousness of the terrific importance to us here at home of what goes on beyond our own borders. I am sure that the big problem of the next decade is not this problem or that group of problems here at home. It is what

President Dickson of the N.A.P.A. and President Meeker of the New York Association.

kind of a world we will be permitted to live in. It is what goes on in the other parts of the world which, whether we like it or not, will influence what goes on here at home."

Reviewing the international situation he said, "We must make up our minds that the present government of Russia is the avowed and irreconcilable enemy of the things we hold most precious, and that in the nature of things it must continue to be so until one or the other of these so diametrically opposed ideologies finds acceptance.

"This is not to say that military war is inevitable. But until this basic issue is settled we shall be at war in some form with Russia and her satellites. Economic warfare, political warfare, psychological warfare—let us hope and pray that we can win with these and thus escape the senseless agony of a third world war. But mark you well, we shall escape another fighting war only if we are fully prepared to fight and to win it.

"If I am right that we are in a war-to-the-finish of ideologies—a war for a world of free men versus a world of enslaved robots—it is immensely important that we mobilize on our side all peoples whose culture, whose principles of government and whose traditions of personal freedom are in accord with our own. The chief hope of winning this war bloodlessly is to draw together under the banner of free men more and more of the world's people so that in the end the police state governments will be hopelessly outnumbered. Such, in my judgment, is the principal purpose and objective of the Marshall Plan.

"It would seem clear that America stands to gain or lose a very great deal indeed by what happens to Europe in the next few years. In view of the tremendous stake we have in European recovery and the preservation of her democratic institutions I am convinced that we must proceed with the program.

"The people of Europe," he said, "barring only Great Britain, are in great ignorance of America's intentions, motives, plans, and assistance given to date. If we are to go through with the European Recovery Program we must not fail to get all the benefits that are in it for us. The people of Europe must be fully aware of what we are doing for them and to what extent. The bill authorizing a U. S. Foreign Information Service has been signed by the president. The appropriation of adequate funds to operate this information service is no less important than approval and implementation of the European Recovery Program itself."

More than 50,000 Persons Visit Industrial Show Sponsored by Indianapolis Association

Reference is made in the report of the First Annual Conference of the Fourth District of the N.A.P.A., held in Indianapolis February 13th and 14th under the auspices of the Purchasing Agent Association of Indianapolis, to the Fourth Industrial Exhibit sponsored by the Indianapolis Association, which was being held in the Manufacturers' Building at the State Fair Ground, and which was visited by more than 50,000 persons.

Obviously the members of the Indianapolis were highly pleased with the success of their Industrial Show at which 150 exhibitors had some $500,000 worth of tools, equipment and materials on display. The purpose of the show was to bring buyer, user and seller in closer contact, and especially to acquaint the former with the new developments in industrial products during the war and postwar years. The show was under the supervision of Dan Young, business manager and show chairman, and Don M. Johnson, general chairman of the purchasing agents committee in charge of the affair.

Among the out of town visitors to the show were Harold W. Mcintosh, past president of the Purchasing Agents Association of New York, purchasing agent for L. O. Koven & Bro., Inc., Jersey City, N. J., and Clair C. Pingree, purchasing agent for the Whitmore Oxygen Company, Salt Lake City, Utah, and other members of the Executive Committe of the National Association, who held their spring meeting in Indianapolis concurrent with the Conference and the Industrial Show. These gentlemen highly commended the members of the Indianapolis Association for their progressiveness in sponsoring the show, and expressed their amazement at the size and completeness of the show, and the large crowds of visitors.

And of especial interest, not only to the

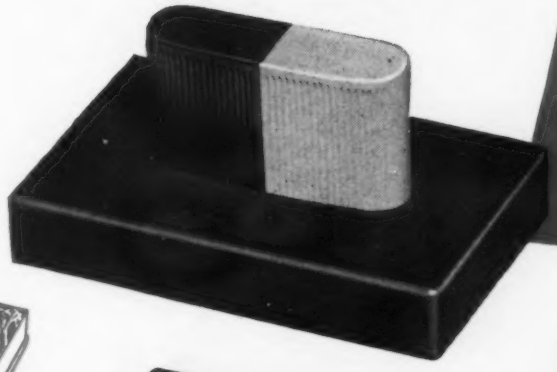
(*Please turn to page 242*)

ADDED PACKAGE PROFITS

from Package *Versatility*

GREAT DISPLAY VALUE

A fashion box for a fashion product reflects quality — a sure-fire combination to increase sales.

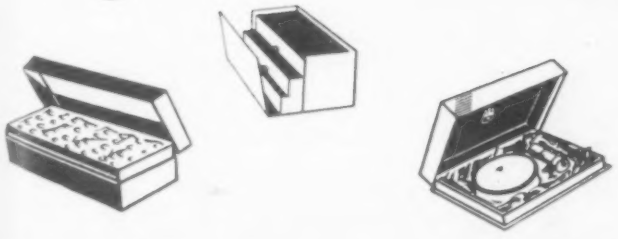


PERFECT PRODUCT PROTECTION

Nestled in its interior support, the product is fixed in perfect safety ready for open box-display.

TAKE HOME VALUE

Extra strength, style and sales-appeal give set-up boxes added "take-home" value.



Your product can be perfectly packaged by combining the versatile features of the set-up box with no extra cost. Obtain greater product sales — greater profits — from your products' package. See your nearest set-up box manufacturer today.

FOR INFORMATION OR SERVICE • CONSULT YOUR NEAREST SET-UP BOX MANUFACTURER

NATIONAL PAPER BOX MANUFACTURERS Association

AND COOPERATING SUPPLIERS

Liberty Trust Building • Philadelphia 7, Penn.

1 AIRCRAFT PRODUCTS: AN Bolts, Nuts, Screws, Studs, Cotters (including Stainless Cotters)

2 SEMS—Pre-assembled Screw and Lockwasher units

3 SPECIALTY NUTS, including cone, barrel, plier, oblong, Tri-Slot, half-round

4 BICYCLE PARTS, from axles and saddle bolts to chain-adjusting screws

5 FURNITURE BOLTS, Skein Nuts, Cabinet Bed Bolts and Bed Screws

6 MILLED STUDS in a full range of sizes

7 DARDELET RIVET-BOLTS with the locking thread . . . time savers for steel construction

8 WEATHER-TIGHT Bolts—*modern* fasteners for wood assemblies—eliminate counterboring

9 PHILLIPS and CLUTCH RECESSED HEAD Machine Screws and Sheet Metal Screws

10 PLACE BOLTS—for locking assemblies rigidly

11 "1035" SET SCREWS of hi-tensile heat-treated steel

12 ROAD MACHINERY and other heavy equipment parts—high tensile and alloy fasteners

13 COTTER PINS of steel, brass, aluminum and stainless steel

14 LAMSON LOCK NUTS—One-piece, all-steel—can be re-used repeatedly

15 PLASTIC INSERTS—made to your specifications . . . in production quantities

16 "BENT" Bolts, including U Bolts, J, L, Hook and Eye Bolts

17 WIRE ROPE CLIPS with the new Hi-Center Saddles and extra-strength U Bolts

18 PIPE PLUGS, square head and headless; forged steel, heat-treated

19 LOK-THRED STUDS—Thread locks and seals in standard tapped holes

Which Fasteners Interest You?

SEND US THIS COUPON FOR COMPLETE INFORMATION ON ANY OF THE FASTENERS ILLUSTRATED ABOVE

NAME _____ POSITION _____

COMPANY _____

ST. & NO. _____ CITY (Zone) STATE _____

THE LAMSON & SESSIONS COMPANY
1971 West 85th Street • Cleveland 2, Ohio

DON'T FORGET! Check the numbers on this coupon which correspond to the numbers of the fasteners above on which you wish more information.

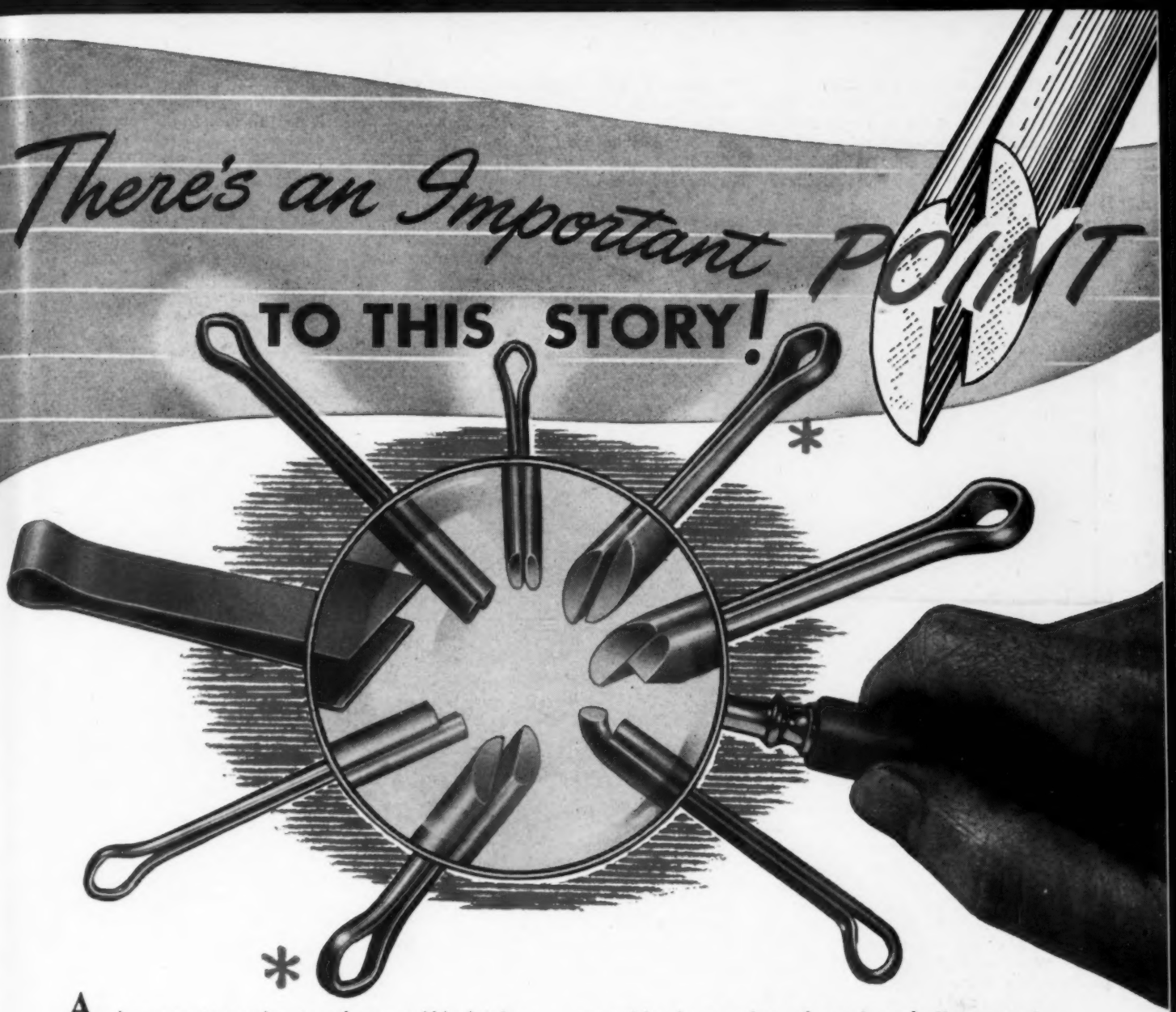
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

20 "BOLTS, NUTS & SCREWS"—a compilation of important technical articles on the manufacture, inspection, specification and use of fasteners; order from The Lamson & Sessions Co. at $1.50 per copy.

21 "BOLT, NUT & RIVET STANDARDS"—a complete and up-to-date standards book on commercial fasteners. *Available only* from the American Institute of Bolt, Nut & Rivet Manufacturers, Hanna Bldg., Cleveland, Ohio. $2.00 per copy.

OTTER PINS • SEMS • KEY BOLTS • CHAIR and LAD
SHEET METAL SCREWS • MACHINE SCREWS • STOVE
PRESSED and COLD PUNCHED NUTS • SKEIN NUTS •
CAPPED NUTS • SLEIGH SHOE BOLTS • STOVE
MARSDEN NUTS • SELF-TAPPING SCREWS • FITTING-UP BOLTS • U BOLTS •

There's an Important POINT TO THIS STORY!



An important question to ask yourself in buying cotters is this: are they engineered to give maximum speed and efficiency in assembly operations—to eliminate time-wasting, money-wasting and fumbling?

Illustrated above are the seven basic point designs of Lamson & Sessions cotter line. Each one has been developed and tested to perform a specific job faster and more efficiently than ordinary "run of the mill" cotters.

The popular "Efficiency" point* design of Lamson cotters gives them a "drift pin" action that helps align parts for easy insertion. And since one shank is longer than the other, it's an easy matter to spread them apart.

Lamson cotters are available in sizes from 1/32" x 1/4" to 3/4" x 24" and may be obtained in production quantities in a variety of metals and alloys—steel, brass, bronze, stainless steel and aluminum alloy.

Consider *your* use for cotters and decide from the illustration which point best satisfies your requirements. Or better still, write us, giving details of your cotter applications and we'll gladly recommend the best point for your particular needs.

You can get quick delivery on most types of Lamson cotters from your mill supplies distributor.

THE LAMSON & SESSIONS COMPANY

General Offices: 1971 West 85th Street, Cleveland 2, Ohio

Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

SPECIAL PURPOSE Lamson & Sessions FASTENERS

URE BOLTS • SEMI-FINISHED NUTS • LAMSON LOCK NUTS • MILLE
• ELEVATOR BOLTS • STOVE RODS • TRACTOR BOLTS and HI-N BOLTS •
ING CENTER BOLTS • HUB and WHEEL BOLTS • MACHINE SCREW LTS • BRA
• BARREL NUTS • OBLONG NUTS • CABINET BED BOLTS • AIR NUTS and SCREWS •
IC INSERTS • EYE BOLTS • CLEVIS PINS • HINGE PINS • TINNERS THUMB SCREWS • FIN HEAD BOLTS •

(*Continued from page* 238)

sponsoring association, but also to other purchasing agent groups who may hold or who contemplate industrial shows of this nature, are the following comments by some of the exhibitors at the Indianapolis show:

O. H. Wilhelm, district manager of the National Cylinder Gas Company, Indianapolis, one of the exhibitors, expressed the feeling that "the show is exceptional."

Some $500,000 worth of products and equipment were displayed by the 150 exhibitors at the Indianapolis show.

This is my first venture at exhibiting in the Purchasing Agents Show," he said, "and it has proved well worth while. I think we have secured more prospective business from the show than from any similar show in which we have had exhibits. It is the only type of show that brings together the seller and the type of people who are buyers and users of our products, which are compressed gases, gas and arc welding and cutting equipment and supplies. From the standpoint of manufacturers or suppliers selling to industry, it is the ideal set-up."

G. A. Stassus, sales manager, Merz Engineers, Indianapolis, manufacturers of gaging equipment, was equally enthusiastic. "I think this show is well organized," he said. "The attendance is far beyond my expectation, and I have been surprised by the interest in our exhibit by so many people. We have made several promising contacts."

W. F. Teer, district manager, Royal Typewriter Company, said, "I think this is one of the finest shows of this type we have ever had in this part of the country. There has been splendid attendance, much interest, and we are highly pleased. I think that the Purchasing Agents are rendering an excellent service to the public in general, and highly commend them for their effort."

C. H. Ellis, C. H. Ellis & Co., Inc., Indianapolis, voiced the opinion that the show was a very successful affair. "We have had a lot of good response", he said. "We did not come out here to sell anything, but actually we have picked up some very nice prospects are meeting plant men, operating men, purchasing agents and others concerned with material handling. We feel that the Purchasing Agents have given us a very desirable opportunity to meet good prospects for our products." Incidentally, one of the salesmen of the C. H. Ellis Company, said he had contacted enough prospects for the Switzer-Cummins power truck to keep him busy for several weeks to come."

George Desautels of the George Desautels Company, Indianapolis, stated that his exhibit gave him the opportunity to show all of the lines of tools and equipment that his company sells, at one time. "The P.A.'s are doing a good job putting the show over", he said. The Desautels Company was awarded a trophy for having the best exhibit in the Industrial Show sponsored by the Indianapolis Purchasing Agents in 1939.

R. B. Epperson, Waverly Petroleum Products Co., Indianapolis, was highly pleased with the large attendance, and the interest shown in his display. "We have distributed thousands of samples of Sol-Speedi-Dri, a product for making floors clean and safe; in fact we have practically run out of them. We would have to spend thousands of dollars to meet the Purchasing agents we have met here. The show has brought buyer and seller together in a practical way to our mutual benefit."

Associated with Chairman Don Johnson of the Purchasing Agents Committee in charge of the show were George Stalker, W. J. Holliday & Co.; Louis Moller, Carter-Lee Lumber Co.; John Casebourne, Esterline-Angus Co.; Russell Patrick, Edgerton Co.; and A. N. Phillps, Stewart-Warner Company.

ECONOMIST GUEST SPEAKER AT NEW YORK ASSOCIATION MARCH MEETING

The regular meeting of the Purchasing Agents Association of New York was held at the Builders Exchange Club on Tuesday, March 16, Leo M. Cherne, executive secretary of the Research Institute of America, and well known author, economist and commentator on business, industrial and political affairs was the guest speaker, with the subject "What's Ahead for Business".

The regular forum, preceding the dinner meeting, featured a discussion on "Steel Pricing Practices", led by R. C. Todd, American Rolling Mills Company. The discussion emphasized particularly the basing point problem.

A sound motion picture, "Crossroads for America", was shown following Mr. Cherne's talk. It exposed the gyrations of the Communist party line and presented the real facts about American business; how business works; who gets what out of the sales dollar; and the meaning of our higher living standards.

Alabama Sellers and Buyers Annual Dinner Big Success

With attendance at capacity of hotel accommodations, the first annual seller-buyer dinner of the Purchasing Agents Association of Alabama, held at the Thomas Jefferson Hotel, Birmingham, on February 19, was a huge success.

Many of the salesman guests, and several of the purchasing agents, were literally shocked by the invitation to the dinner, when they agreed to sit in the chair next to Bernice Cohron, Purchasing Agent of the Jefferson-Hillman Hospital. The seat was wired, and a push of a button brought on the shock. The climax of the entertainment was the entertaining floor show. "Purchasing Agents Hits and Bits of 1948", with Tom Briskey as master of ceremonies. The surprise act came at the very last when four sellers and four buyers were called up to dance with the pretty girls of the chorus. The ensuing game of "Bumps-a-

(*Please turn to page* 246)

LION NATURALUBE D.H.D.

OIL FOR DIESEL AND HEAVY DUTY MOTORS

Basically Different 4 WAYS*

1 REMOVES HARD CARBON

Nature gave Naturalube remarkable carbon-removing ability. This oil takes harmful carbon off rings, pistons, valves and plugs while the engine runs . . . cuts power-loss and wear.

2 STRONGER PROTECTIVE FILM

The naturally tougher film of Naturalube stands up under the heat and shock of heavy duty operation . . . provides increased protection for motor parts.

3 GREATER PENETRATION AND ADHESION

Naturally greater penetrative qualities assure constant lubrication of close-fitting parts. Naturalube's greater clinging power assures lubrication from the moment the engine starts.

4 NON-CORROSIVE—SAFE

Naturalube does not contain nor form substances injurious to bearings and other metal surfaces. It's naturally safe!

*** RESISTS FORMATION OF SLUDGE**

Lion especially reinforces Naturalube D.H.D. to make it resistant to formation of harmful sludge and lacquer . . . to keep motors cleaner.

GUARANTEE

If you don't believe that Naturalube D.H.D. is the best oil you have ever used, Lion Oil Company will give you your money back!

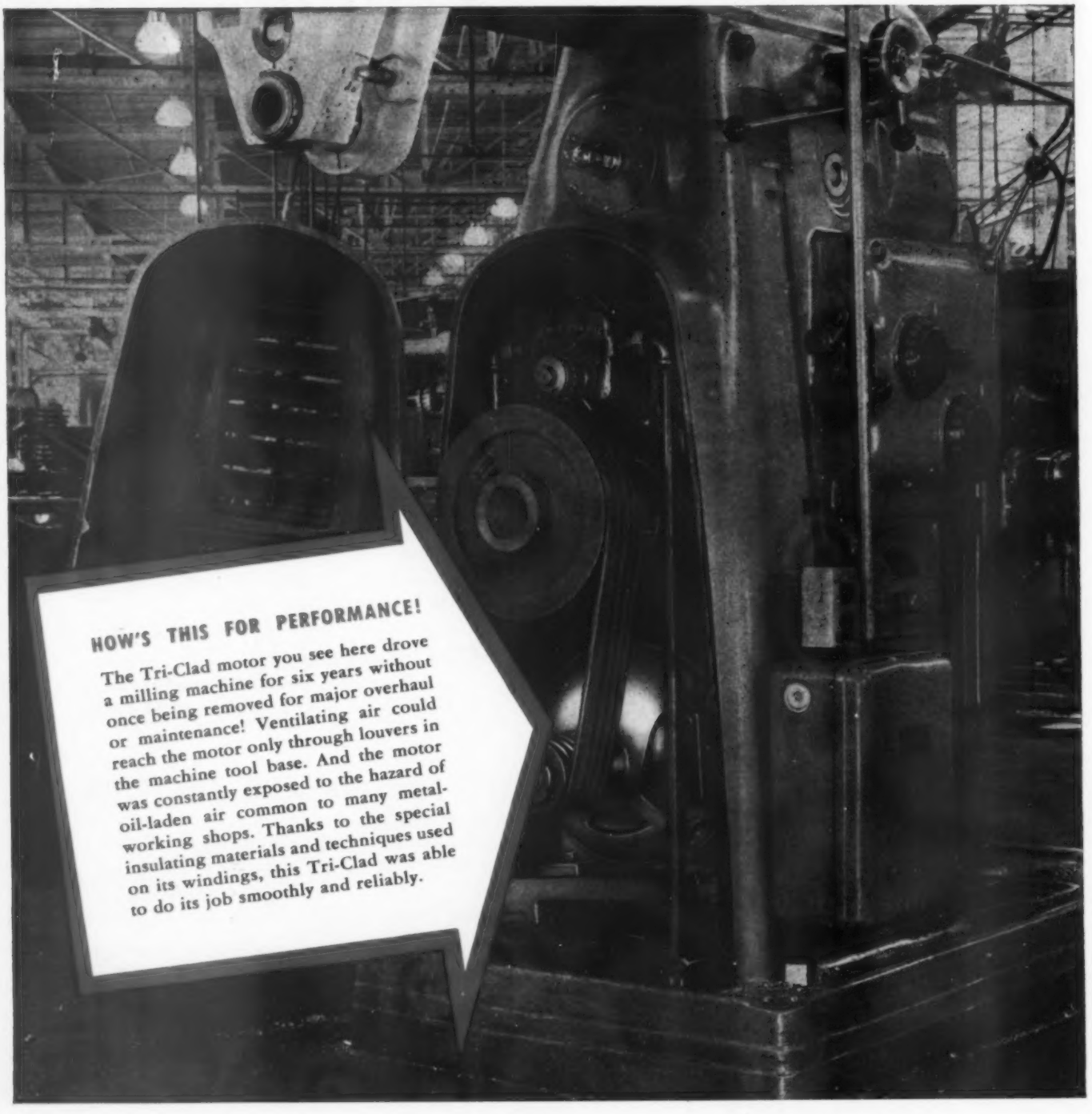
Ask your Lion Distributor for complete information about D.H.D. or write to Lion Oil Company, El Dorado, Arkansas.

"Petroleum Promotes Progress"

LION

LION OIL COMPANY, EL DORADO, ARKANSAS

6 years in



HOW'S THIS FOR PERFORMANCE!

The Tri-Clad motor you see here drove a milling machine for six years without once being removed for major overhaul or maintenance! Ventilating air could reach the motor only through louvers in the machine tool base. And the motor was constantly exposed to the hazard of oil-laden air common to many metal-working shops. Thanks to the special insulating materials and techniques used on its windings, this Tri-Clad was able to do its job smoothly and reliably.

GENERAL ELECTRIC

760-4

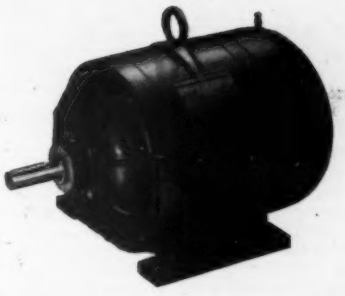
"solitary"

prove you can't beat

TRI/CLAD

extra protection

Six years ago, the Bell Aircraft Corp. installed in its Buffalo plant many machine tools which had G-E Tri-Clad motors tucked away inside. Operating in confined quarters where the volume of cooling air was limited (and laden with oil), these sturdy Tri-Clads toiled 24 hours a day, 7 days a week all through the war years. At a time when manpower for motor maintenance was almost unobtainable, these motors proved they had the "stuff" to stay on the job with only the barest amount of attention.



The Tri-Clad family is a big one now! It includes open (dripproof) motors, totally enclosed motors (shown above), gear motors, vertical motors and wound-rotor motors. There's a Tri-Clad for almost every application.

EXTRA PROTECTION IS THE ANSWER!

Installation studies like this prove this important fact—that when there's a tough motor job to be done, you can't beat Tri-Clad extra protection. Over 1,500,000 Tri-Clad motors have been built. All of them feature cast-iron enclosures, improved winding and insulating techniques, and advanced bearing design. All are equipped with *extra protection* against physical damage, *extra protection* against electrical breakdown, and *extra protection* against operating wear-and-tear. That is what "Tri-Clad" means—better motor performance at less cost through maximum motor protection.

THE TOTALLY ENCLOSED TRI-CLAD!

We believe the Tri-Clad totally enclosed induction motor is industry's most dependable motor. It is designed for use in adverse atmospheres—in iron dust, out-of-doors, in hazardous areas, and chemical atmospheres. It is available in both standard and explosion-proof enclosures. Call or write your nearest G-E field office for more information today. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GE

TRI/CLAD

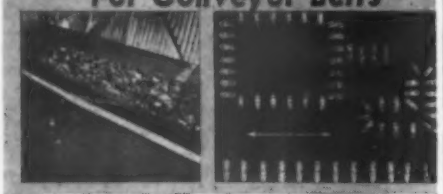
REG U.S. PAT. OFF.

MOTORS

Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

For Conveyor Belts



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from ¼" to 1½" thick and of any width. The view on the right shows the various types of rips that can be repaired with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts

ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belting of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for **Bulletin V-14.**

For Transmission Belts

ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to ⅛" thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street, Chicago 44, Ill.

(*Continued from page* 242)

Daisy" received hilarious applause.

On the serious side, Hugh P. Bigler, executive vice-president, Connors Steel Company, and Clyde H. Porter, Purchasing Agent, Alabama By-Products Corporation, delivered brief but interesting addresses on seller-buyer relationship from their respective points of view.

Chester T. Moates, president of the Purchasing Agents Association of Alabama, and Purchasing Agent of Matthews Electric Supply Company, presided at the dinner meeting. George L. Wilson, Purchasing Agent of Jefferson County, was general chairman of the event. George H. Cole, Purchasing Agent of Alabama Power Company, was program chairman. Earl L. Griffin, Purchasing Agent, Pate Supply Company, was in charge of entertainment.

Buyer-Seller Relationship talks received much attention at Birmingham

Educational Buyers Annual at Columbus

Charles Hoff is new President—Convention to be Held May 5-8—Program schedules 33 Speakers

The 27th Annual Convention of The National Association of Educational Buyers is scheduled to be held at the Deshler-Wallick Hotel in Columbus, Ohio, during the four days starting May 5th.

The program is of unusual interest because of its diversity, and a total of 33 speakers covering the field on a fast timetable, interspersed with trips to Ohio State University, Battelle Memorial Institute, and Capital University, dinner at Capital University, social hours, and the inaugural banquet. The program is as follows:

Wednesday, May 5. Registration and Business Officers' Conference. Topics at the conference: "Satisfactory Labor Relations Programs", led by Donald Dickason, Director of Nonacademic Personnel, University of Illinois; "Necessity for Immediate Adjustments on Insurance", led by Eldon C. Hart, Treasurer, Ricks College, Rexburg, Idaho; and "Survey of University Purchasing and Resultant Reorganization", by N. Preston Breed, Assistant to Administrative Vice-President, Harvard University. Evening: Social hour and warm-up party with A. J. Johnson, Business Manager, Denison University, Granville, Ohio, presiding.

Thursday, May 6. Keynote address by R. B. Stewart, Vice-President, Purdue University. Address, "Higher Education and National Affairs", by Dr. Francis J. Brown, American Council on Education and Executive Secretary of the President's Commission on Higher Education. Bus trip to Ohio State University. Luncheon address, "Modern Trends in College Architecture" by H. D. Smith, University Architect, Ohio State University.

General session at Battelle Memorial Institute; address, "The Business Outlook", by Arthur Babson, Babson's Reports

Dinner at Capital University. Address "College Purchasing Approaches Maturity", by Dr. John Dale Russell, Chief of the Division of Higher Education, U. S. Office of Education, Washington, D. C.

Friday, May 7. Address, "Financial Relations of Colleges and Universities with the Veterans Administration", by A. H. Monk, Director of Training Facilities Service for Vocational Rehabilitation and Education, Veterans Administration, Washington, D. C.

Panel on Current Purchasing Problems: "Sources, Material and Design of College Dormitory Furniture and Furnishings", D. V. Garstin, Purchasing Agent, Yale University;

"An effective Method for Securing Better Purchasing Office Relations With Other Departments", D. L. Wilt, Purchasing Agent, University of California;

"Comparative Study on Commodity Costs 1941-1948", Charles W. Hayes, Supervisor of Purchases, Emory University, Georgia;

"Concise, Effective and Complete Reports for a College Purchasing Office;

"Purchasing Procedures, Vendor File, Commodity File, etc.", Harlan S. Kirk, Purchasing Agent, Iowa State College;

"Food Prospects for 1948-49";

"Radiant Heat Versus Steam and Hot Air", Jamie R. Anthony, Controller, Georgia School of Technology, Atlanta, Ga.;

"Laundry Equipment and Service", Gerald Hoar, Directory of Laundries, University of Notre Dame, South Bend;

"Survey of Modern Recording and Dictating Machines", Frank Martineau, Purchasing Agent, Brown University, Providence, R. I.;

(*Please turn to page* 248)

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A NAME TO REMEMBER

WHEN YOU BUY

Shelving

FOR LIBRARIES—STOREROOMS AND OFFICES

Schools and universities are finding that these strong, prefabricated shelving units meet the needs for additional book stacks at large savings in money. Made with a framework of clear Ponderosa Pine, fastened together with a patented, cadmium plated hardware bracket and with Masonite Temperd Presdwood to serve as shelves and ends, Hines-Shelves can be erected by unskilled labor. Everything comes to you, carton packed, ready for quick, easy assembly and the framework can be painted or stained to harmonize with any color scheme.

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IMMEDIATE DELIVERY—Standard starter and extension units measure 34 in. high, 36 in. wide, 11½ in. deep with 3 shelves; 36 in. by 11½ in. are ready for immediate delivery. Where quantities are large, special sizes will be made to order.

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Address.....

City.....*State*.....

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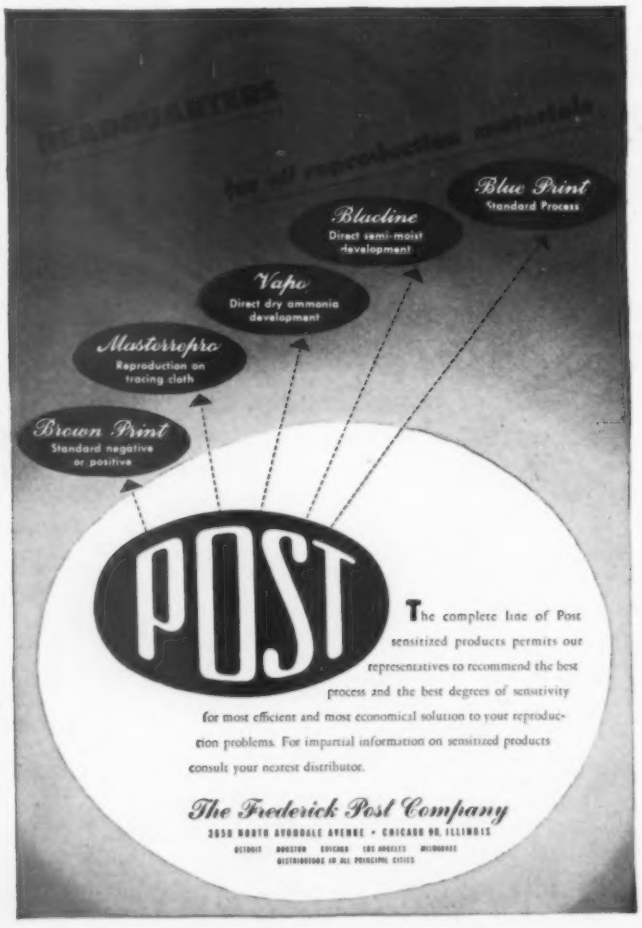
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Standard Process
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Direct semi-moist development
Vapo
Direct dry ammonia development
Masterrepro
Reproduction on tracing cloth
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POST
The complete line of Post sensitized products permits our representatives to recommend the best process and the best degrees of sensitivity for most efficient and most economical solution to your reproduction problems. For impartial information on sensitized products consult your nearest distributor.
The Frederick Post Company

(*Continued from page* 246)

"Our E and I Cooperative"; George Mew, president, Ed Taylor, treasurer, and Bill Price, Manager.

The President's Inaugural Banquet. Installation of 1948-49 officers.

Saturday, May 8. The Philosophy of Public Buying", Clifton Mack, Chief, Bureau of Federal Supply, U. S. Treasury Department.

Forum on N.A.E.B. affairs, subjects: "Purchasing Manual", "Directory of N.A.E.B. Members", "Report on Advisory Committee for the Bulletin", Location and Scope of National Office", and "Bibliography of Purchasing Articles and Buyers Library". The Forum will be followed by report of the Resolutions Committee; announcements, and convention adjournment.

Hoff New President

Charles Hoff, Financial Secretary, University of Omaha, recently elected president of the Association for the 1948-49 term, will be inducted into office at the inaugural banquet on May 7th, by retiring president Gerald D. Henderson. The other new officers are as follows:

Vice presidents: H. B. Bentsen, Business Manager, George Williams College; the Rev. J. Leo Sullivan, S. J., Director of Purchases at Holy Cross College; and, Jamie Anthony, Comptroller, Georgia School of Technology.

Treasurer, H. W. Loman, Purchasing Agent, Pennsylvania State College.
give his monthly economic round-up.

TORONTO ASSOCIATION VISITS SIMPSON PLANT

A plant visit to the Robert Simpson Company Ltd. featured the February 12 meeting of the Purchasing Agents Association of Toronto. Following the visit, members of the association were guests of the company at a dinner in the Arcadian Court. Several of the Simpson executives were present, and a film entitled "Merchandising by Catalogue" was shown.

The "Members Night" portion of the meeting followed, during which four of the members gave capsule talks on the industries they represent. Speakers were: Elton Clarke, Rolph-Clark-Stone, Ltd.; Alf. Curry, Canada Decalcomania Co.; Bill Findlay, Lincoln Electric; and Jack Garlick, Exide Batteries.

CALIFORNIA GOVERNMENTAL GROUP ELECTS OFFICERS

Martin H. Gerry III, Purchaser for the city and county of San Francisco, was recently elected president of the California State, County and Municipal Purchasing Agents Association, at the concluding meeting of a three-day conference at the Mission Inn, Los Angeles.

J. W. Hughes, Manager of Purchases and Stores of Los Angeles County was elected 1st vice-president, and H. R. Lafortune, Purchasing Agent of the Sacramento Municipal Utility District, 2nd vice-president. Verne O. Gehringer, San Diego County Purchasing Agent, was re-elected secretary-treasurer.

(*Please turn to page* 252)

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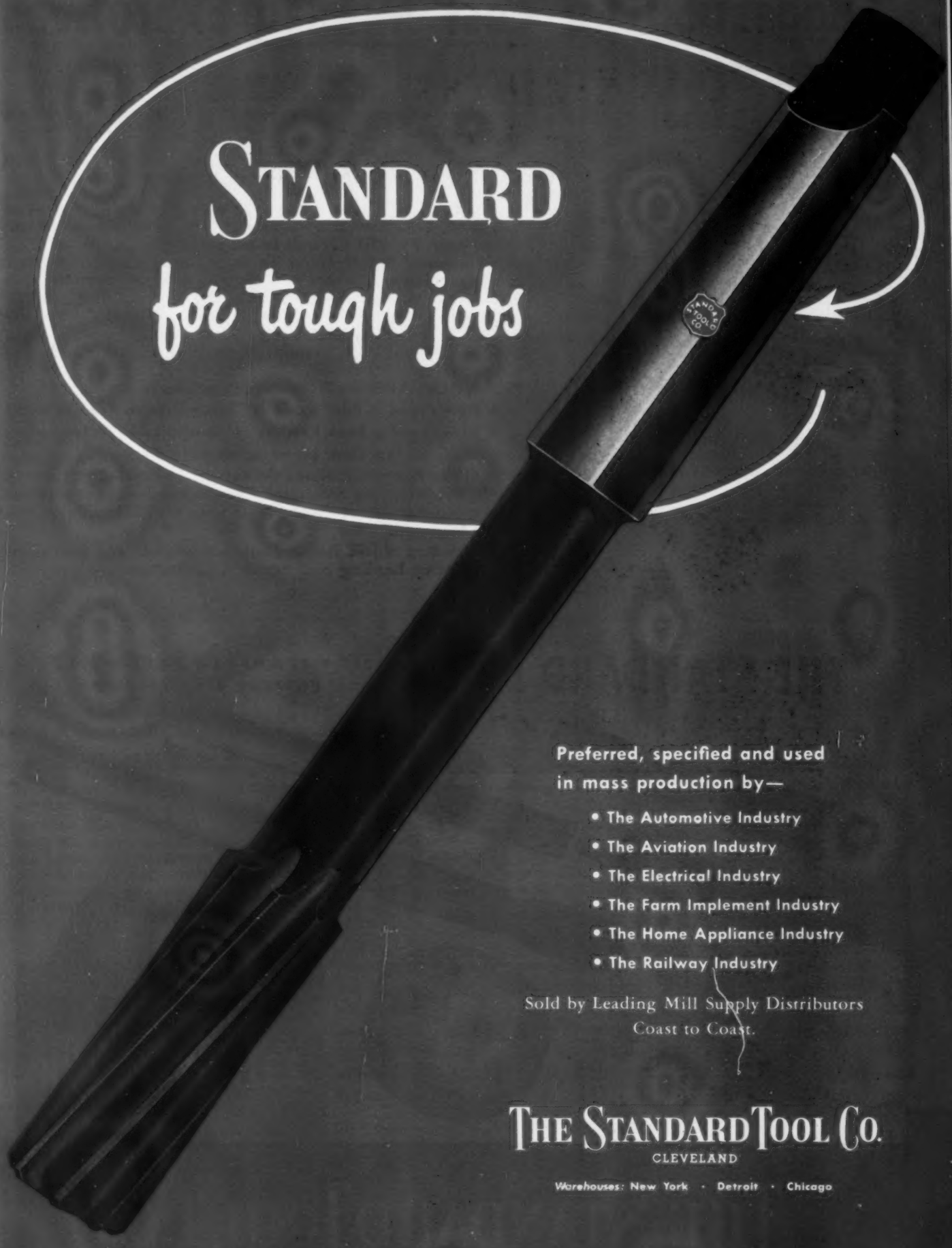
for tough jobs



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- The Automotive Industry
- The Aviation Industry
- The Electrical Industry
- The Farm Implement Industry
- The Home Appliance Industry
- The Railway Industry

Sold by Leading Mill Supply Distributors Coast to Coast.

THE STANDARD TOOL CO.
CLEVELAND

Warehouses: New York · Detroit · Chicago

THE STANDARD LINE · *Drills · Reamers · Taps · Dies · Milling Cutters · Special Tools*

Suggestion for Cost Minded Executives

Experts tell us...

"An advertisement as technical as this will not be read."

We disagree Frankly we believe that statement a poor appraisal of the intelligence, initiative and ambition of executives in the metal working industry.

● Have you taken a look at cutting tool costs recently?

The actual measure is expressed as "P"—tool cost per hole or per cut.

It's arrived at by this formula:

$$\frac{(F+M)}{L} \div N = P$$

In which F = first cost of the tool; M = maintenance cost of tool; L = hours of service life; N = number of holes or cuts per hour. P = cost per hole or per cut.

Standard Shield Brand Tools, operated as recommended, when measured by this formula will win your preference in nine out of ten operations. They are designed and made to give you substantial reduction in costs—(P).

The other big plus when you specify and use Standard Shield Brand Drills, Reamers, Taps, Dies, Milling Cutters and Special Tools is in—

STANDARDIZATION, which results in:

★ Time saved in Purchasing ★ Time saved in Requisitioning
★ Time saved in Stock Keeping ★ Reduction in Tool Inventory
★ Time saved in Machine Shop.

If you have confounded the experts by reading this far, we will welcome your inquiry or your questions—our experience in solving tough problems is at your disposal without cost or obligation.

Standard Shield Brand Tools are stocked and sold coast to coast by Leading Mill Supply Distributors.

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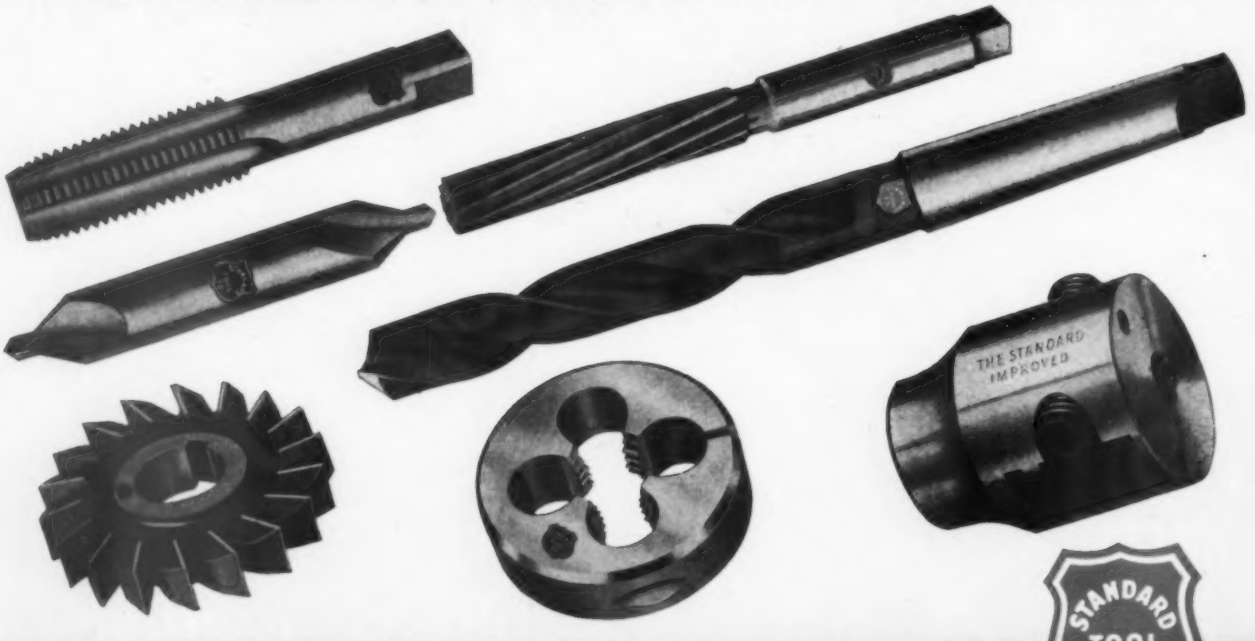
DRILLS • REAMERS • TAPS • DIES
MILLING CUTTERS • SPECIAL TOOLS



STANDARD TOOL CO.

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CLEVELAND

Warehouses: New York · Detroit · Chicago

For real savings, take these tips and buy

NYLON-BRISTLED BRUSHES

1. JOE: I'd like to try a nylon-bristled brush, but are you sure it'll hold the paint?

ED: If it's a brush that's made right—with *genuine* nylon—it'll hold paint! Here's one—with the nylon bristles blended and sanded to pick up and hold paint as well as or better than any other you can buy! Costs no more, either.

2. JOE: Well, I want a brush that will lay down a smooth surface. How about nylon for that?

ED: If you use a *genuine* nylon-bristled brush right, you get as smooth a surface as you can get with any well-made brush. And you can always make sure it's a nylon if you see the words "nylon bristles" on the handle.

3. JOE: A lot of brushes get heeled up. Does a nylon?

ED: Not if it's properly cleaned. And that's a cinch. Just comb the brush out in turpentine, rinse it clean and hang it up to dry. For fast cleaning, you can even boil a nylon in trisodium phosphate solution. What other bristles will stand *that?*

4. JOE: Can you use nylon bristles in any kind of paint?

ED: Sure. But they don't recommend using nylon with shellac. Still you can use nylon with whitewash and calcimine, which raise cain with hog bristles. Shellac doesn't *really* hurt nylon. Boil the brush in water for 30 minutes, then dry it overnight. It'll be like new.

5. JOE: I've heard nylon softens up in hot weather. Is that right?

ED: Sure. That's partly right. Nylon does lose stiffness at 100°F. or more. But did you ever think about this? When it's hot enough to soften a nylon-bristled brush, the surface is too hot to paint anyway. The paint would crack and blister.

6. JOE: Well, I've had good service with hog-bristled brushes for years. Why should I switch to nylon now?

ED: You can get 'em as good as or better than any others for about the same price—even less in larger sizes. They outwear others 3 to 5 times—save 40 to 80% of brush costs. That's been proved on the job, over and over again!

DU PONT
NYLON BRISTLES

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BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

IF YOU WANT TO SAVE MONEY, yet get the same top-quality results on the job, ask your supplier for nylon-bristled brushes. *There's nothing like nylon!* Be sure to look for the words NYLON BRISTLES stamped on the brush handle. Clip coupon below for free copies of our helpful new booklet, "How you can save money on the job with paintbrushes bristled with DU PONT NYLON." E. I. du Pont de Nemours & Co. (Inc.), Plastics Department, Room 844, Arlington, N. J.

CLIP THIS COUPON NOW!

Du Pont, Plastics Dept., Room 844, Arlington, N. J.
Please send me ( ) copies of "How you can save money on the job with paintbrushes bristled with Du Pont Nylon."

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Fuller research experts are constantly testing cotton yarns . . . testing them for tensile strength, both wet and dry, twist, absorbency, wear, shrinkage, and rate of absorption. Above is shown a section of the Fuller laboratory where the tensile strength of cotton yarn is tested. Only the best grades of cotton yarns can pass this test . . . just one of six they must pass before they're good enough to go into a Fuller Mop. For the best in industrial mopping, make sure you get a Fuller Industrial Cotton Wet Mop.

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WASHINGTON ASSOCIATION HOLDS ANNUAL TACOMA MEETING

The annual "Tacoma Meeting" of the Purchasing Agents Association of Washington was held in Tacoma on March 11. The affair began with a luncheon at the "Top of the Ocean" following which the members toured the aluminum plant of the Permanente Metals Co. A bowling match at the Tacoma Bowl was held next, after which the group attended a dinned meeting at the New Yorker Cafe. The meeting featured a debate between Dr. Leo Trepp and Rabbi Montague N.A. Cohen, on both sides of the Palestine question.

Association members visted the plant of the Imperial Candy Co. on February 26. The visit was arranged by Cecil McKinstry, president, and Walter J. Fry purchasing agent of the company.

President S. E. Ringheim of the state association presided at the dinner meeting. Tacoma committeemen assisting George H. Wilson, Atlas Foundry and Machine Co., chairman of the group, were: R. S. Gruver, Washington Hardware Co.; J. M. Lamb, St. Regis Kraft Co.; J. M. McCullough, Pennsylvania Salt Mfg. Co.; M. B. Palmer, Northwest Door Co.; B. W. Recob, National Blower and Sheet Metal Co., Ben Robertson, Permanente Metals Co.; C. S. Shassey, Puget Sound Plywood Inc.; Eric Strommer, Hunt & Mottet Co.; and Arthur M. Angove, City of Tacoma.

M. I. T. PROFESSOR SPEAKER AT NEW ENGLAND MEETING

The March 25 meeting of the New England Purchasing Agents Association, held at Schrafft's Boston, featured an address by F. Alexander Magoun, associate professor, Massachusetts Institute of Technology and president of Human Relations, Inc. His subject was "Human Relations". Professor Magoun is the author of various books, among them "Balanced Personality". He is a consultant for many industrial companies and served in the State Department in Washington during the war.

Association members visited the plant of Ginn & Co., textbook manufacturers, on Tuesday, February 17. The visit was arranged through association member David A. Perry. On March 16, a plant visit was made to the Ford Motor Company in Somerville, through the courtesy of W. A. Burnham, Purchasing Agent, and E. L. Duquette, plant manager.

USES OF ABRASIVES TOPIC AT N. W. PENNA. MEETING

The monthly meeting of the Purchasing Agents Association of Northwestern Pennsylvania was held in Warren, Pa. on Thursday, March 4. Yates Catlin, executive secretary of the Allegheny River Improvement Association, was one of the guest speakers, and led a discussion on river improvements. E. J. Lalor of the Norton Company Worcester, Mass., was the other featured speaker, on the topic "Abrasives In Everyday Life". His talk was accompanied by motion pictures.

(*Please turn to page* 254)

Holds to Driver for fast assembling; Stays fast in *flush* set-ups

These advantages reach all the way down to the smallest "V"-Head Cap Screws made. Illustration shows a No. 4 (stock size "Allen") held on a "Handi-Hex" Allen Driver, — fastest fastening combination for small parts in electronic devices. Positive hex-socket wrenching achieves tight set-ups; threading to high Class 3 fit *keeps* them tight... Write us for informative data and samples; your local ALLEN Industrial Distributor supplies the screws.

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- Only One Moving Part . . .

Power consumption varies with the load and a constant pressure is maintained through the entire capacity range.

Only two bearings—located well outside of the housing—require lubrication.

External bearings assure clean dry air at all times.

Ample clearances permit normal quantities of dust to pass through the machine without harmful effect.

The impeller assembly—the only moving part—is accurately balanced.

Allen-Billmyre Blowers and Exhausters are highly efficient for Agitation and Aeration . . . Manufacture of Gases, Acids . . . Combustion Processes . . . Conveying . . . Cooling and Ventilation . . . and all low Pressure and Vacuum Requirements

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Sports Notables at Columbus Association Frolic

Over 300 purchasing agents and their guests attended the Mid-Winter Frolic of the Columbus Association of Purchasing Agents, held on February 10 in the main ballroom of the Southern Hotel. Guests of honor and principal speakers were Richard Larkin, athletic director of the Ohio State University, and Carroll Widdoes, backfield coach at Ohio State.

The evening's main speakers spoke on future football prospects for the Buckeye eleven. Both expressed the opinion that while Ohio State may not have a championship team next year, they will be strong contenders for top honors in the Western Conference struggle. Mr. Widdoes told of several shifts in playing positions which are designed to strengthen the team. He also mentioned the members of last year's freshmen team who are expected to add strength to the varsity eleven. A floor show and motion pictures of the Ohio State-Michigan game for 1947 rounded out the evening.

Hugh Graves, M & R Dietetic Laboratories, was chairman of the frolic committee; Tom Payne, Sumner and Company, handled refreshment arrangements; Ralph Betts, American Educational Press, secured the entertainment; and Leonard Gabriel, Julian and Kokenge Shoe Co., was in charge of ticket sales.

Dr. James S. Owens, executive director of the Ohio State University Research Foundation, talked on the subject "Research—A National Asset" at the regular monthly meeting of the association on February 23 at the Fort Hayes Hotel. Dr. Owens, who served the government's Office of Scientific Research during the war, told of various scientific investigations under way at the university.

ORGANIZATION EXECUTIVES ADDRESS LOUISVILLE ASSN.

An informative meeting featuring talks by executives of three local and federal organizations was held by the Purchasing Agents Association of Louisville on February 17, at the Kentucky Hotel. The guest speakers explained in detail the services their units can offer to purchasing agents.

C. R. Graham, librarian of the Louisville Free Public Library, outlined the many services that can be obtained without charge from the reference department of a modern library. He listed particularly the many business publications and services to which the library subscribes.

Boykin Baker, assistant collector of customs in charge of the U. S. Customs Service office in Louisville, explained some of the customs regulations as they apply to the importation of goods and commodities. He pointed out the things the buyer can do to expedite the handling of products through the customs service and the help his office can give in facilitating this operation.

T. A. Ballantine, president of the Better Business Bureau of Louisville explained the aims and objectives of his organization and what help it can give purchasing agents in reducing shady transactions. Dr. C. W. Williams, of the University of Louisville,

PURCHASING ROUND TABLE FEATURES CHICAGO MEETING

A panel discussion among purchasing, sales, production and management featured the March 11 meeting of the Purchasing Agents Association of Chicago. The meeting was held at the Hotel Sherman.

Arthur G. Pearson, Director of Purchases, American Meat Institute, acted as moderator. Representing management was Ralph C. Golseth, vice-president of the Glidden Company. B. C. McGrane, director of production control, Ford Motor Company, Chicago, represented production. Carl J. Sharp, executive vice-president, Acme Steel Company, was the sales representative. The purchasing position was presented by William D. Jackson, Purchasing Agent, Container Corporation of America.

The association is sponsoring a practical

(*Please turn to page* 256)

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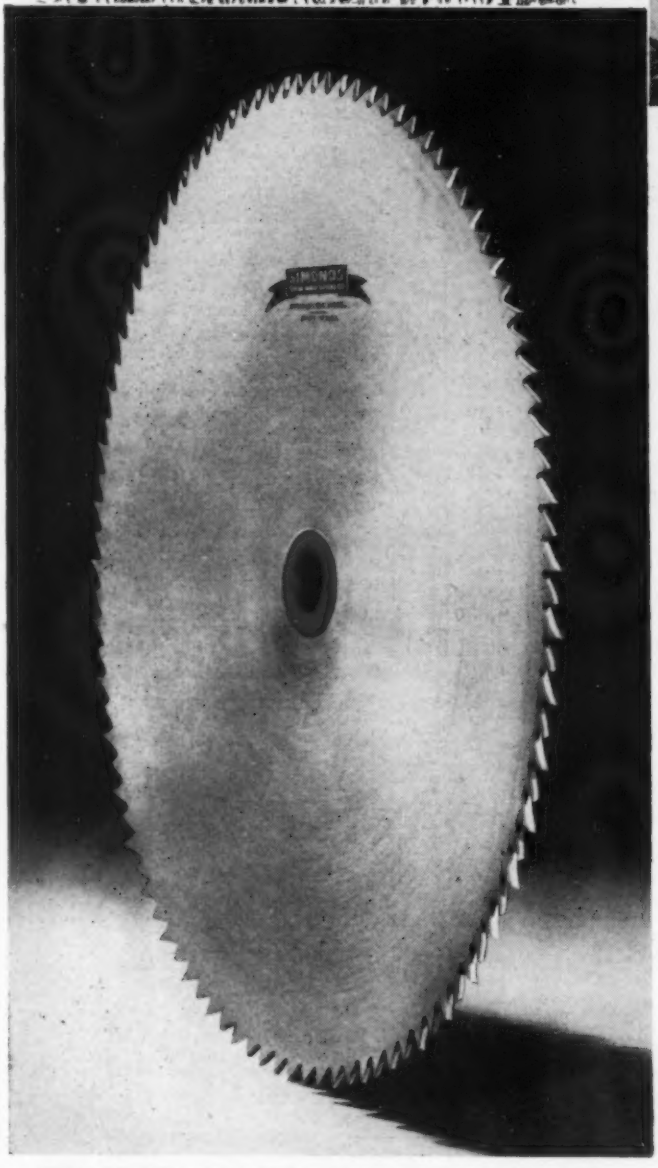

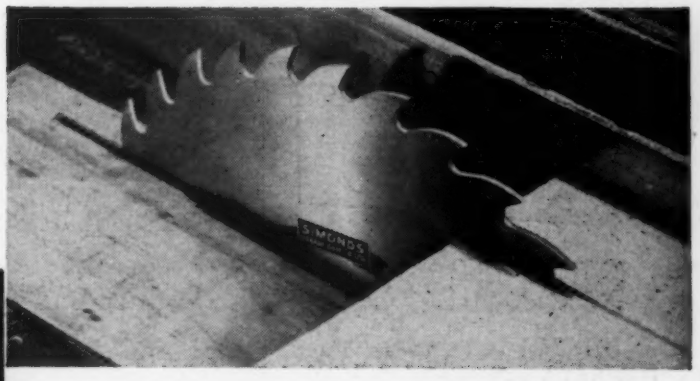

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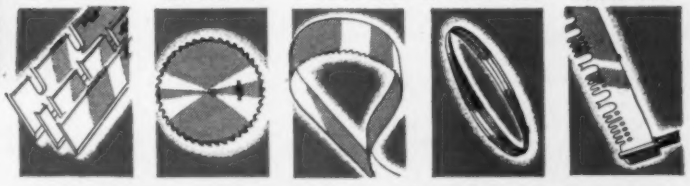
2. **Specially Formed Saw Teeth** . . . for greater uniformity . . . better "cutability."
3. **Expert Smithing** assures true roundness . . . closer concentricity . . . better balance.
4. **Special Simonds Machines** for flatter grinding which means accurate clearance right up to saw-edge . . . and Simonds famous finish, which means truer running saws.
5. **Inspections on Every Process** to make sure you get the best results out of the best saws made.

Ask your dealer for the type and size of Simonds "Red Center" Solid Circular Saw best suited to your own work. *Call today.*

. . . and don't forget SIMONDS ALSO MAKES

ALL TYPES OF MACHINE KNIVES | INSERTED-POINT SAWS (Bits and Shanks) | WIDE BAND SAWS | NARROW BAND SAWS | CROSS-CUT SAWS



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a great new
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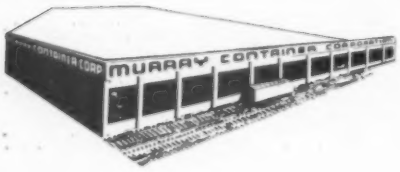
CORRUGATED BOXES



Murray Container Corporation's newly-opened Philadelphia plant, complete with the most modern equipment available now offers the finest in corrugated and solid fibre boxes and sheets, cleated fibre boxes, and die-cut specialties. We can help you toward greater economy and efficiency. Your inquiry will bring a prompt and detailed response and quotations.

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23rd & WASHINGTON AVE., PHILA. 46, PA.

(*Continued from page* 254)

course in business letters at the Hotel Sherman, which began on March 8. Over 265 purchasing agents are enrolled in the course which will continue for eight weeks. Professor Martin J. Maloney of Northwestern University school of speech is instructing the class. There is no tuition charge for the purchasing personnel of member companies for whom the course is being conducted.

The Chicago association conducts continuous educational features for its membership. In addition to frequent commodity group sessions on specific items, the association sponsors college training courses at Roosevelt College, Northwestern University, and the Illinois Institute of Technology. These courses lead to a certificate in Purchasing Administration if successfully completed.

"COPPER FROM THE MINE TO THE USER"—ST. LOUIS

The regular meeting of the Purchasing Agents Association of St. Louis was held at the Hotel Sheraton-Coronado on February 24. Guest speaker was Dr. Harry P. Croft, director of technical control on research, midwestern division, Chase Brass & Copper Company, Inc. The subject of Dr. Croft's talk was "Copper From the Mine to the User".

Warren J. Matthews, Falstaff Brewing Co., gave the regular "Know Your Companies" talk. Herbert DeStaebler and Walter J. Wallace led the open forum prior to the general assembly. Commodity discussion was led by D. M. Baker. Announcement was made of the April 13 meeting, at which Garnet T. Dickson, president of the National Association of Purchasing Agents will be the principal speaker.

CINCINNATI MEETING PAST PRESIDENTS' NIGHT

The regular meeting of the Cincinnati Association of Purchasing Agents was held on Tuesday, March 9, in the Victory Room of the Hotel Gibson. The affair was known as "Past Presidents' Night" featuring "very little business, and a whole lot of entertainment". Past president L. W. Scott Alter acted as master of ceremonies.

PORT COMMISSIONER SPEAKS AT TWIN CITY MEETING

The February 11 meeting of the Twin City Association of Purchasing Agents was held at the St. Paul Athletic Club, St. Paul, with Endre Mouton, general western agent, board of commissioners of the Port of New Orleans as principal speaker. Mr. Mouton's topic was "Exports".

The association's Valentine dinner dance was held at the University Club of St. Paul on February 28. Door prizes and prizes to the ladies were awarded.

On March 10, members of the association visited the "Betty Crocker Kitchens" at the General Mills Building. In the evening,

(*Please turn to page* 258)

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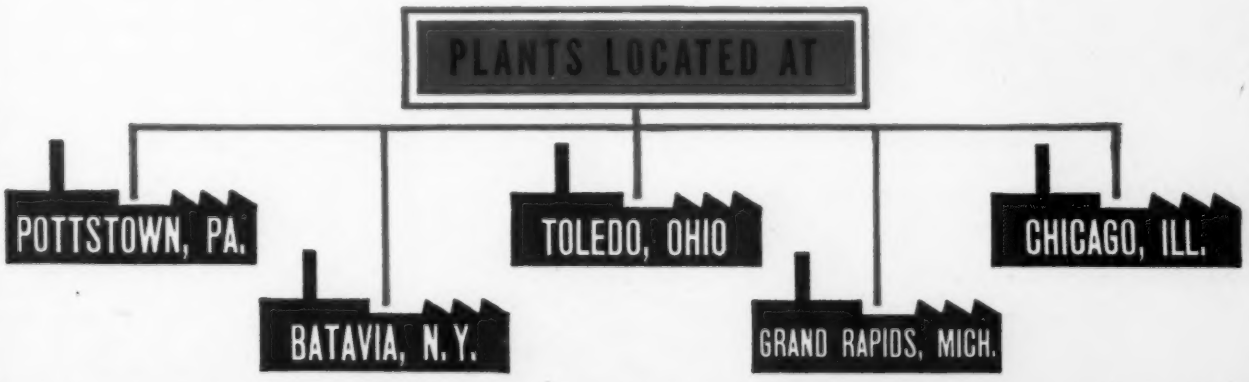

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(*Continued from page 256*)

dinner was served in the Minneapolis Athletic Club. After dinner a film entitled "Operation 46", giving details of the General Mills activities was shown, with member Chris Nelson giving the commentary. A question period followed the showing of the picture.

Committee appointments for 1948 are as follows: Program—R. J. Malone, general chairman; monthly chairmen: Rudolph Janzen, D. F. Carson, P. J. Calder, A. E. Carlson, E. A. Lindquist, B. T. Rabuse, Howard Cullen, C. S. Long, W. G. Eberle, F. J. Morlock; Membership—J. A. Bousquet, chairman; Chas. Hayward, Chas. E. Scanlon; Nominating—H. E. Hildebrandt, chairman; T. S. Paulsen, B. B. Countryman, C. B. Garvin; Auditing—G. B. Smith, chairman; Fred Gram, O. W. Morton, Sr.; Arbitration—H. R. Woolsey, chairman; E. C. Boldt, A. T. Nelson; Education—C. A. Vinci, chairman; Acquaintance — Paul Trapp, chairman; W. T. Kirk, W. F. Bloedow, A. R. Boesel, E. M. Feeser, E. A. Lambert, R. A. Nentwig; Attendance—D. D. Wyatt, chairman for Minneapolis; J. M. Hunt, chairman for Saint Paul; Convention — G. F. Goulet, chairman; Publicity—G. L. Quinn, chairman; Dinner-dance—E. A. Vigard, chairman.

NEW OFFICERS ELECTED BY FLORIDA ASSOCIATION

The following new officers were elected by the Florida Association of Purchasing Agents at a recent meeting: Dan D'Alemberte, Chattahoochee, president; O. L. Williamson, Jacksonville, national director; Harold A. Mann, Jacksonville, 1st vice-president; R. N. Garden, Jacksonville, 2nd vice-president; C. V. DooLittle, Jacksonville, secretary-treasurer. Directors are: S. L. Jackson, Jacksonville; Earl Pierce, Tampa; Frank Myers, Miami; Kenneth Barrett, Jacksonville; Jerry Watson, St. Petersburg; H. C. Hughes, Orlando.

"PAPERWORK SIMPLIFICATION" MEMPHIS MEETING SUBJECT

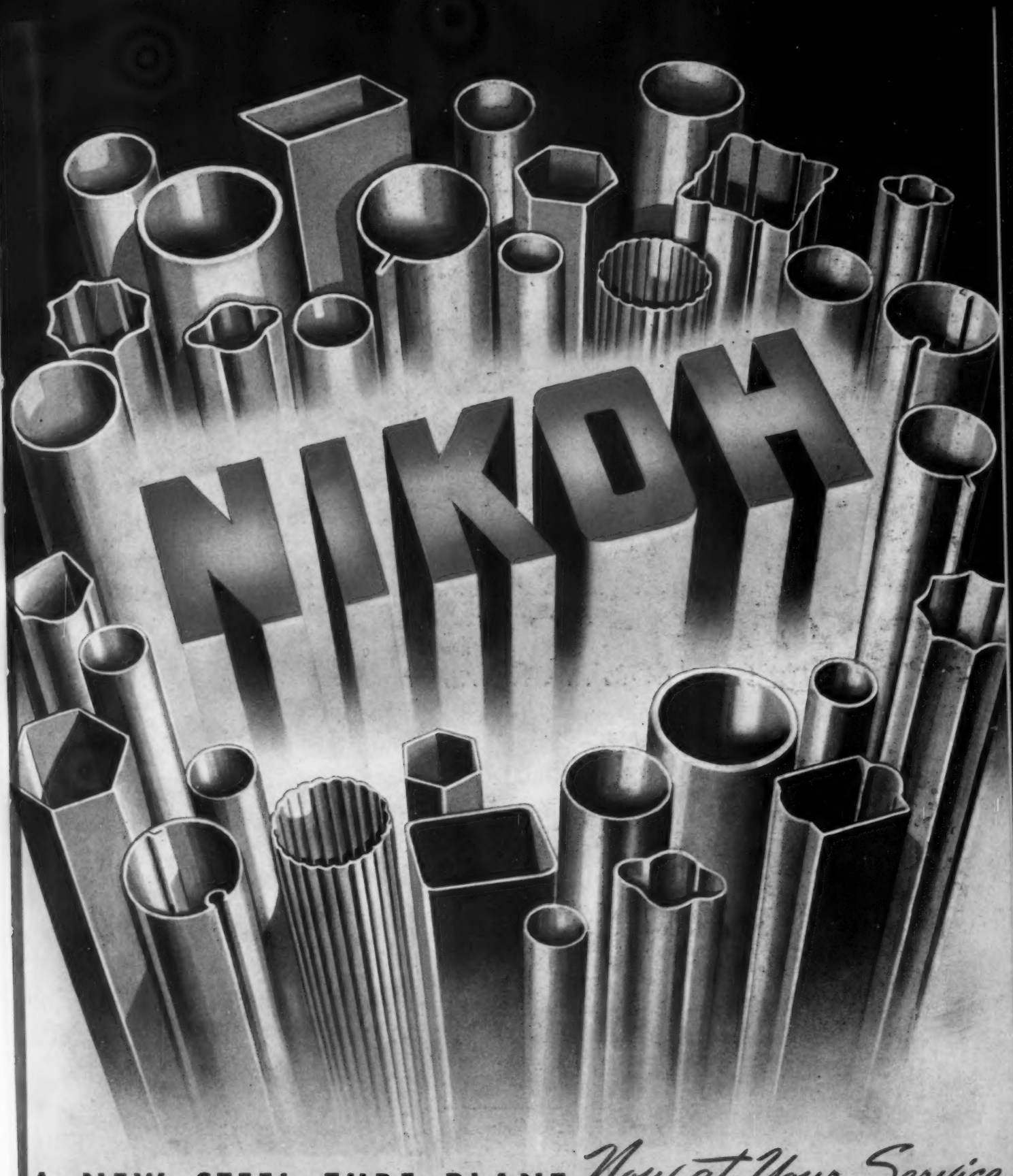
Meeting on February 18 at the Peabody Hotel, the Purchasing Agents Association of Memphis heard a talk on "Paperwork Simplification" techniques and their effects on costs. Ben S. Graham of the Standard Register Co., an expert on paperwork methods improvement, was the principal speaker. Mr. Graham used films and charts to highlight his talk.

N. W. PENNSYLVANIA GROUP HEARS METALLURGY TALK

The Purchasing Agents Association of Northwestern Pennsylvania held its monthly meeting in Warren, Pa., on February 5. Featured speaker of the evening was E. E. Hall, of the Universal Cyclops Steel Corporation, who talked on "Some Aspects of Metallurgy".

Colonel P. J. Stevenson, industrial sales manager of the Northern and Keystone Division of the Pennsylvania Electric Co., gave a brief talk on "The Whys and

(*Please turn to page 262*)



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Nikoh Tube Co. is now producing welded steel tubing and pipe to meet all standard specifications for diameter, wall thickness, and finish. Our efficient manufacturing methods assure production costs among the lowest in the industry.

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Nikoh products are accurate in wall thickness and size concentricity—easy to fabricate. The surface is smooth and uniform—ideal for coating or plating. We will gladly co-operate with you in problems of engineering and production.

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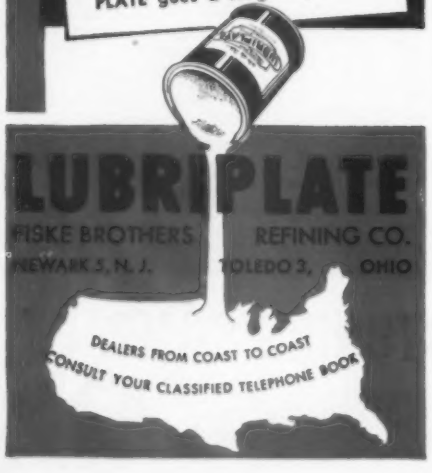
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(*Continued from page* 258)

Wherefores of the Power Shortage", in connection with a commodity discussion led by E. F. McCullough on "Power".

Prior to the meeting members were taken on a conducted tour of the new Pennsylvania Electric Co. power station at Starbrick, Pa.

FORT WAYNE ASSOCIATION HOLDS "STEEL" MEETING

The Fort Wayne Purchasing Agents Association met on February 16 at the Chamber of Commerce to hear L. S. Hamaker, assistant general manager of sales for Republic Steel Corp., speak on "Present Trends In the Steel Industry". The affair was designated as the association's "steel" meeting.

Other speakers were Arthur Fruechtenich, city controller, and A. C. Wermuth, president of the Chamber of Commerce. L. C. Wakefield, president, presided, and N. S. Tilman, program chairman, presented the speakers.

"CLASHING IDEOLOGIES" CONNECTICUT ASSOCIATION

The regular meeting of the Purchasing Agents Association of Connecticut was held on February 24, at the 1771 Inn, Meriden. Principal speaker at the affair was William Purtell, president of the Holo-Krome Screw Corp., Hartford, Conn. Mr. Purtell spoke on "Clashing Ideologies", particularly pertaining to collectivism and individual enterprise.

TRI-STATE ASSOCIATION VISITS MONSANTO PLANT

The Tri-State Purchasing Agents Association met in Charleston, West Virginia on Tuesday, March 16. Before the meeting the group visited the plant of the Monsanto Chemical Co., located at Nitro, West Virginia. At the evening session, held in the Kanawha Hotel, Dr. R. L. Sibley, Monsanto Chemical Co., spoke on "Interesting Facts Concerning the Chemical Industry in the Kanawha Valley". Dr. Sibley has been a resident of the valley for 34 years.

PHILADELPHIA TO BE SCENE OF NIGP MEETING OCT. 18-20

The Third Annual Conference and Exhibit of the National Institute of Governmental Purchasing will be held in Philadelphia, Pa., on October 18, 19 and 20. The affair will take place on the Roof of the Hotel Bellevue-Stratford.

Charles H. Grakelow, Director of the Department of Supplies and Purchases of the City of Philadelphia, will serve as General Conference Chairman. He will be assisted by a committee of governmental buyers and a committee from the ranks of the exhibitors. A floor plan of the hotel is available on request to Albert H. Hall, Executive Director of the NIGP, 730 Jackson Place, NW., Washington, D. C.

"PSYCHOLOGY AND BUSINESS" MONTREAL MEETING SUBJECT

The regular meeting of the Purchasing Agents Association of Montreal was held in the Mount Royal Hotel on March 16. Dr. Robert B. McLeod, chairman of the Department of Psychology, McGill University, was the guest speaker, on the subject "Psychology and Business".

Among the guests at the meeting were students who had completed the course on purchasing at Sir George William College conducted by John Crawford. Mr. Crawford has conducted the course for a number of years. Prizes and diplomas were awarded to the successful candidates.

GLASS INSULATION TALK FEATURES TOLEDO MEETING

The regular meeting of the Toledo Purchasing Agents Association was held at the Toledo Yacht Club on February 19. C. V. O'Brien, sales manager, Toledo branch, Owens Corning Fiberglas Division, acted as master of ceremonies of the program which was devoted to the uses of Fiberglas.

G. O. Hartzell, manager of the industrial division of the company, gave a talk on the various uses of Fiberglas as adapted to industrial needs. R. J. Black, manager of the electrical insulation division described its uses as an insulating material, and showed a film featuring glass insulation in actual use in industry.

A new feature of the association's meetings was tried out in the form of commodity discussions held before dinner. This month's subject was "steel" and the forum was conducted by Howard Z. Clark, vice-president and sales manager of Detroit Steel Corporation.

Association members visited the Acme Plant of the Toledo Edison Co. on March 11.

SALESMEN'S NIGHT MEETING SPRINGFIELD ASSOCIATION

The March 31 meeting of the Purchasing Agents Association of Springfield, O. was scheduled as annual "Salesmen's Night Meeting".

On February 25, association members visited the plant of the Champion Company, makers of steel vaults and burial equipment. The company entertained the group at dinner following the visit. Vice-president Cooksey was host for the affair.

AIRPORT MANAGER GUEST OF LEHIGH VALLEY ASSOCIATION

The monthly meeting of the Lehigh Valley Purchasing Agents Association was held at the Nazareth Inn, Easton, Pa. on February 23. Guest speaker was W. M. "Wiley" Post, manager of the Allentown-Bethlehem Airport. Mr. Post warned that a strong air force is the first line of defense and attack of the United States. He said that to supplement a strong military air force, civil aviation must continue in a healthy condition.

(*Please turn to page* 264)

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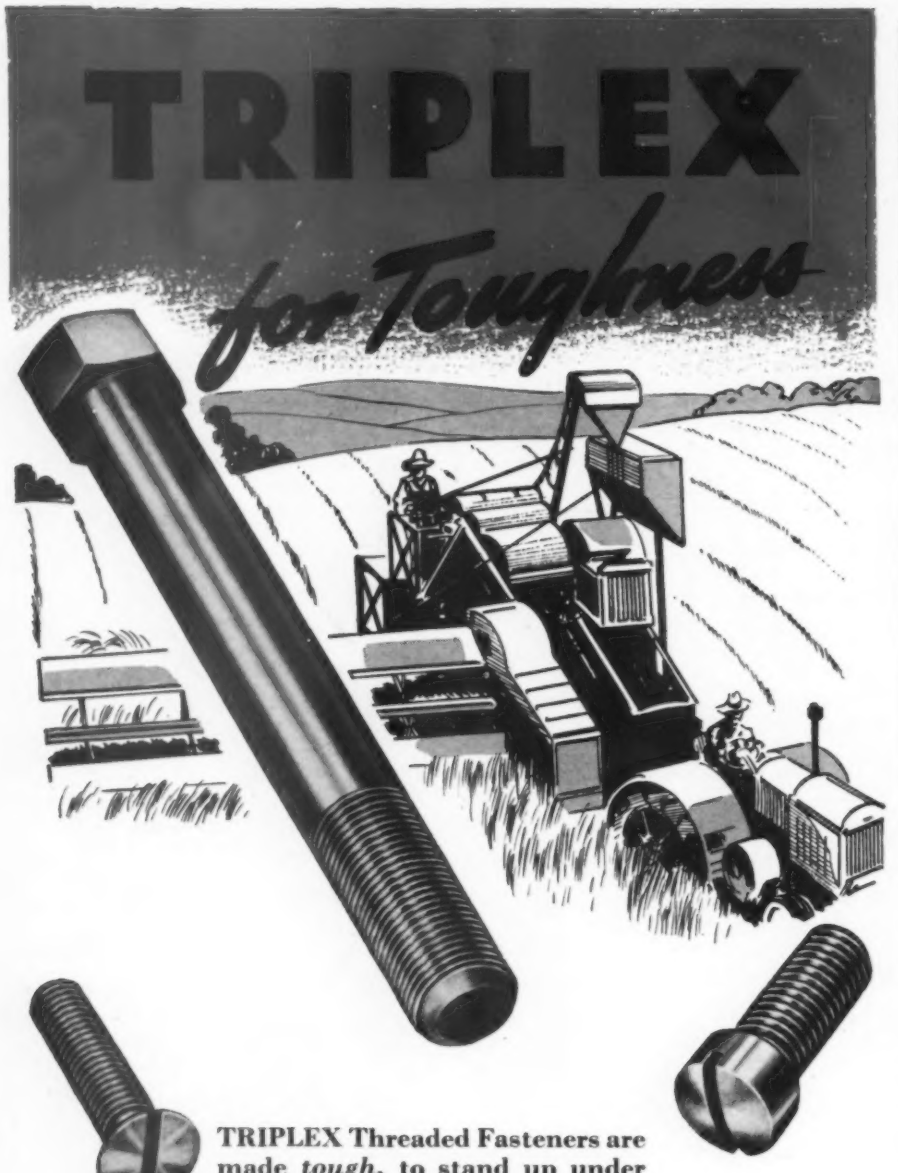

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(*Continued from page 262*)

Announcement was made of the joint session on April 1 with the Purchasing Agents Association of Reading, at which Garnet Dickson, president of the National Association of Purchasing Agents spoke. George A. Renard, N.A.P.A. secretary-treasurer, was guest speaker at the association's March meeting in Bethlehem.

UNITED NATIONS BUYING DESCRIBED TO M.P.A.C.

F. A. Mapes, Director of Purchase and Supply Dviision, United Nations, was the guest speaker at the regular meeting of the Metropolitan Purchasers Assistants Club, held on Tuesday, March 9, in the Midston House, N. Y.

Mr. Mapes outlined the problems of purchasing for a heterogeneous organization like the United Nations, spicing his talk with descriptions of some of the oddities encountered in his division's operations. He also described some of the practical details of running the department.

John S. Babiy, Adams Laboratories, chairman of the group's education committee, led a forum discussion on "Inventory Control" preceding Mr. Mapes' talk.

CHATTANOOGA ASSN. HOLDS SUCCESSFUL INDUSTRIAL SHOW

Almost sixty exhibitors of products ranging from nylon hose to heavy industrial machines took part in the annual Industrial Show of the Purchasing Agents Association of Chattanooga, held in Memorial Auditorium on March 1, 2 and 3. New developments in the field of machinery, tools, equipment, materials and material handling equipment were on display. The nylon hosiery, manufactured in local mills, was included in the exhibit of the E. I. du Pont de Nemours and Company, which is building a twenty million dollar nylon yarn plant in the vicinity.

Harlan E. Cross, Purchasing Agent of Sloss-Sheffield Steel and Iron Co., Birmingham, Ala., was the guest speaker at the February 10 meeting in the Hotel Patten. Mr. Cross' subject was "The Purchasing Agent's Changing Status".

"IN SEARCH OF CANADA" BRITISH COLUMBIA TOPIC

"In Search of Canada" was the subject of an address by Howard S. Coulter at the regular meeting of the Purchasing Agents Association of British Columbia, held February 10 in the Hotel Vancouver. Mr. Coulter, a veteran of both world wars, was chosen by the government to "project a satisfying and encouraging picture of Canada" to the people of Great Britain during the discouraging years of the past war. Mr. Coulter reminded his hearers that one appreciates his own country more when away from it, and pointed out that "public enemy number one is sheer ignorance".

The educational group meeting on February 25 featured a talk by A. G. Scott,

(*Please turn to page 266*)

1873 – Henry G. Keasbey and Richard V. Mattison open a modest drug manufacturing business in Philadelphia. Basic ingredient: Magnesium Carbonate.

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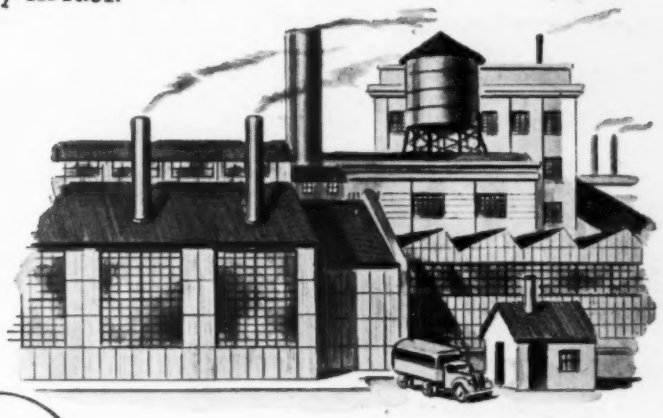

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In celebration of the anniversary, K&M has prepared a brief, interesting history of the Company. We will be glad to send you a copy with our compliments.

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KADOL

The C. B. DOLGE CO.

WESTPORT, CONNECTICUT

(*Continued from page 264*)

district sales manager, Imperial Oil Ltd. on the subject "Petroleum Industry in British Columbia". Mr. Scott quoted statistics to show that the highest consumption of petroleum products in the world on a per capita basis is in British Columbia, and said that production in local refineries did not fill its requirements.

HOPCRAFT GUEST SPEAKER AT PITTSBURGH ASSN. MEETING

The regular meeting of the Purchasing Agents Association of Pittsburgh was held Tuesday, February 17 at the Hotel William Penn. Guest speaker for the evening was Arthur G. Hopcraft, Purchasing Agent of the Cleveland Worm and Gear Company, whose subject was "An Expert Speaks".

George A. Renard, executive secretary-treasurer of the National Association of Purchasing Agents was the principal speaker at the "Executive Night" meeting of the association, held on March 18.

TRUST OFFICER SPEAKS AT DALLAS ASSOCIATION MEETING

The Purchasing Agents Association of Dallas held their regular meeting on February 12 at the Melrose Hotel. Art H. Drebling, assistant trust officer of the Mercantile National Bank, was the guest speaker, with the subject "Wills, Trust Matters and Estate Taxes." The program was arranged by Lind Crockett.

ALABAMA ASSOCIATION MEETING

The regular dinner meeting of the Purchasing Agents Association of Alabama was held in the Thomas Jefferson Hotel, Birmingham, on Thursday, March 11. Featured at the meeting was a film on the Sugar Bowl football game between Alabama and Texas. The film was shown by Jeff Coleman of the University of Alabama.

SWANTON, RENARD ATTEND NEW ORLEANS MEETING

The annual "Executive Night" meeting of the Purchasing Agents Association of New Orleans was held at the Jung Hotel on Tuesday, March 9. Guest speakers of the evening were Robert Swanton, past president of the National Association of Purchasing Agents, and presently chairman of its Business Survey Committee, and George A. Renard, executive secretary-treasurer of the N.A.P.A.

"The Fundamentals of Sound Purchasing —Quality—Service—Price" was the theme of the general meeting on February 16, under the guidance of the Education Committee. Tom Born, Freeport Sulphur Company, spoke on "Buying the Right Quality"; Jimmie Morse, New Orleans Public Service, on "The Service Factor"; and Emile Morvant, Realty Operators, Inc., on "Buying at the Right Price." At the conclusion of the talks, the meeting was thrown open to discussion by members, and the three speakers acted as a "Board of Experts".

(*Please turn to page 268*)

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Steel Tubes form an extension arm for a radial drill used in the drilling of large metal sheets — a steady support for precision machining.

THERE'S plenty of "muscle" in Globe Steel Tubes. It leads to unheard-of tricks with mechanical tubing, and many an unusual application has been possible because of this inherent structural strength. It works out like this: Your designing engineers have a problem. They submit it to Globe. Our engineers and technicians work in close cooperation with your design engineers — study requirements, and help you to find exactly the kind of tubing you need for even the most unusual application. That's part of Globe service. It's available on any tube problem.

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- ★ Gloweld Welded Stainless Steel Tubes
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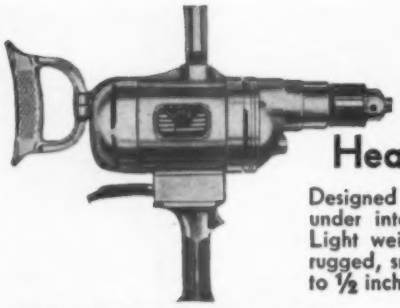
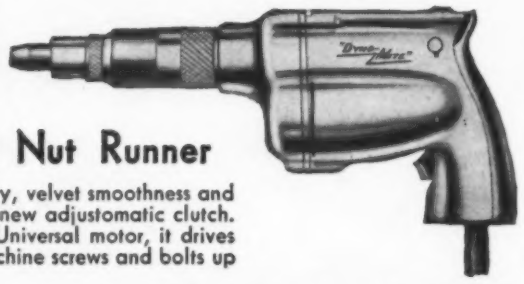


DRILL

Heavy Duty Electric Drill

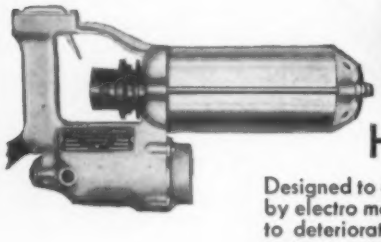
Designed to give dependable performance and long life under intermittent or continuous heavy duty operation. Light weight, speedy, and durable it is powered by a rugged, smooth-running Universal motor. Drills holes up to ½ inch in steel.

DRIVE



Screw Driver and Nut Runner

Designed to give extreme flexibility, velvet smoothness and greater load capacity through the new adjustomatic clutch. Driven by powerful, cool-running Universal motor, it drives wood screws up to Number 10, machine screws and bolts up to Number 12.

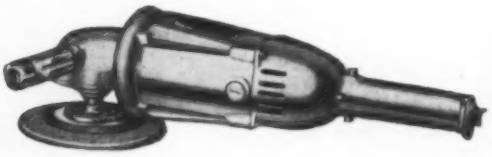


HAMMER

Heavy Duty Electric Hammer

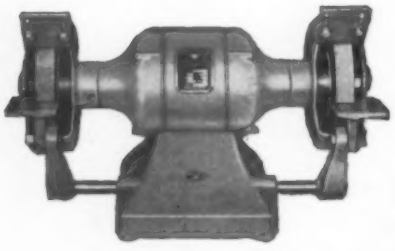
Designed to deliver 3600 powerful blows per minute. Actuated by electro magnets there are no motors, gears, shafts, or bearings to deteriorate under constant vibration. Drills seasoned concrete at rate of 1 inch to 2 inches per minute depending on hardness of material.

SAND



Portable Disc Sander

Designed and powered for sanding, grinding, polishing, wire brushing, stone surfacing and cup grinding on large working areas of wood or metal — wherever large 9 inch disc diameter and high peripheral speed mean economy. All moving parts mounted on grease-sealed ball bearings.



GRIND

Heavy Duty Grinder

Designed to start quickly, operate smoothly under continuous heavy loads. Super-powered, precision-balanced motor and oversize labyrinth-sealed ball bearings mean low cost, steady, heavy duty service. Knee action tool rest for straight or angle grinding.

Better — Faster — at Lower Cost

with these light weight, compact, easy-to-use Millers Falls electric tools. Each has proved its ability to give dependable service and long life on a wide variety of jobs. Write for complete information.

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MILLERS FALLS COMPANY
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MILLERS FALLS TOOLS
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"GLASS COMES OF AGE" ROCHESTER BUYERS ASSN.

The Rochester Association of Industrial Buyers held its regular meeting at the Normandie Hotel on March 10. The program for the evening was presented by the Corning Glass Works, and featured a lecture demonstration entitled "Glass Comes of Age", by Harold Vogt of the company. A color moving picture, "Glass for Science", was shown following the talk.

A discussion session on the topic "How Much Engineering Should the Purchasing Department Do" was also held. Members of the Purchasing Agents Association of Rochester participated in the discussion. Members of the buyers group were invited to attend the meeting of the Rochester Association on March 24 at the Rochester Club.

"What Management Expects of the Buyer" was the subject of a talk by Lawrence Martin, assistant to the manager at the Camera Works of the Eastman Kodak Co., at the February 10 meeting of the association. A discussion on follow-up procedure followed the talk.

COMMODITY COMMITTEE SPONSORS BUFFALO MEETING

The regular monthly meeting of the Purchasing Agents Association of Buffalo was held at the Hotel Statler on Wednesday, March 10. The meeting was designated "Commodity Night" under the auspices of the Commodity Committee, headed by Harry Grow, Bethlehem Steel Co.

Members who spoke on the program were: John J. Wallace, Great Lake Pressed Steel Company, on "Steel Fabrication"; Henry Wodke, Donner Hanna Coke Corporation, on "Coke"; and Howard Neubecker, Don F. Johnson Co., on "Industrial Supplies and Equipment".

TULSA ASSOCIATION VISITS PUMP AND VALVE PLANT

Members of the Purchasing Agents Association of Tulsa visited the plant of Frank Wheatley Pump & Valve Manufacturers on February 25. Following a general inspection of the plant, refreshments and a dinner were served in the plant cafeteria.

G. E. EXECUTIVE SPEAKS TO EASTERN NEW YORK MEETING

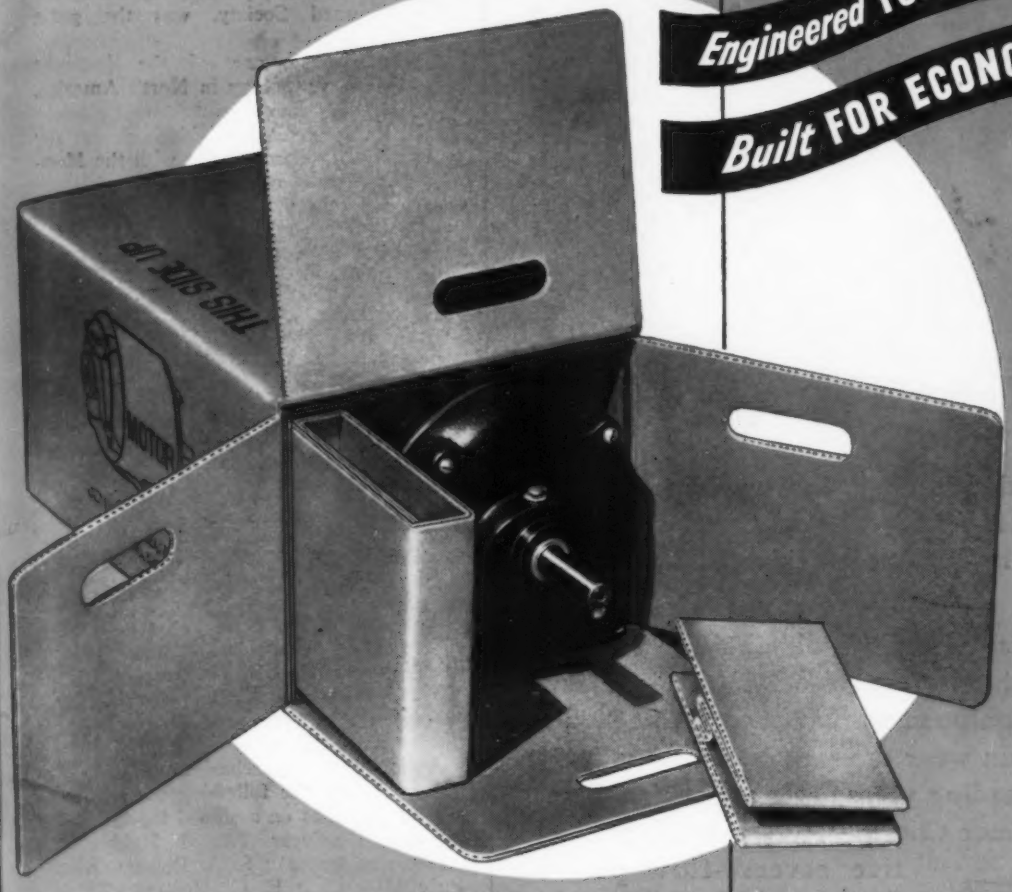
Lemuel R. Boulware, vice-president of the General Electric Co., was the chief speaker at the March 17 meeting of the Purchasing Agents Association of Eastern New York, in the Van Curler Hotel, Schenectady. The affair was the fourteenth annual "Executive Night" of the association. Mr. Boulware, who has been responsible for his company's policy on employee relations since June, 1947, spoke on the new type of thinking now being developed in industry concerning the kind of activity needed in employee and community relations. A full report of the meeting will be carried in the next issue of PURCHASING.

(*Please turn to page* 270)

H & D BOXES

Engineered FOR STRENGTH

Built FOR ECONOMY



H & D corrugated boxes do more than protect in transit; they cut packing time, material costs, freight charges—pare distribution expense to the core. Easier to handle, warehouse, sell, H & D-packed products bring more profits to the manufacturer . . . at less cost to the buyer. Remember—H & D boxes make a good product better. Consult the H & D Package Laboratory on ALL packaging problems.

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(*Continued from page 268*)

Stuart F. Heinritz, editor of PURCHASING, was the guest speaker at the association's February 19 meeting, held in the Wellington Hotel, Albany. Mr. Heinritz' subject was "Plain Talk About Purchasing".

PENOLOGY AUTHORITY GUEST AT TORONTO ASSN. MEETING

The regular meeting of the Purchasing Agents Association of Toronto was held in the Royal York Hotel on Wednesday, March 10. J. Alex Edmison, executive secretary of the Prisoners' Rehabilitation Society in Toronto, which is known as the John Howard Society, was the guest speaker.

Recognized as one of the foremost authorities on penology in North America, Mr. Edmison spoke on "Some Canadian Social Problems". Mr. Edmison was for many years in close contact with the Montreal Association of Purchasing Agents in his capacity as public speaking instructor for its educational committee's course in purchasing.

WASHINGTON WOMEN'S GROUP

The women's group of the Purchasing Agents Association of Washington met at the Gowman Hotel, Seattle, on February 4. Police Chief George Eastman was guest speaker, on the subject "Seattle's Police Department".

AKRON ASSOCIATION MEETING FEATURES "STUDENTS NIGHT"

The Purchasing Agents Association of Akron held a "Students Night" meeting at the Woman's City Club on Tuesday, March 16. Members of the Akron University purchasing classes were guests of the association at the affair.

A discussion of purchasing problems was held, at which the following members answered questions on assigned topics: L. A. Murphy, Goodyear Tire & Rubber Co. (discussion leader); S. A. Bowers, Akron Pure Milk Co.,; E. G. Hammack, B. F. Goodrich Co.; Norman Smith, The Firestone Tire & Rubber Co.; W. R. Lantz, Sun Rubber Co. (class instructor); John I. Evans, Ohio Edison Co., and D. W. Alexander, Ohio Brass Co. Members of the audience participated in the discussions.

HOUSTON ASSOCIATION ELECTS J. B. THOMPSON PRESIDENT

J. B. Thompson, Purchasing Agent for Shell Pipe Line Corporation, was elected president of the Purchasing Agents Association of Houston at a recent meeting of the group. He succeeds Sam H. Harper, division Purchasing Agent of the Pure Oil Company, who becomes national director.

Other officers chosen were: C. S. Fink, Dow Chemical Co., Freeport, 1st vice-president; E. E. Graham, Reed Roller Bit Co., 2nd vice-president; James Cox, Southwestern Purchaser, secretary; W. J. Ped-

(*Please turn to page 272*)

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Sodium Nitrite
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Calcium Chloride
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AMERICAN CHAIN DIVISION
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In Business for Your Safety

(*Continued from page 270*)

die, Maintenance Engineering Corp, treasurer. W. R. H. Mau of Missouri Pacific Lines was elected alternate national director. The new officers were installed at the association's annual inaugural dinner dance, held at the Rice Hotel on February 13.

"The Purchasing Agent's Viewpoint" was the subject of a talk by O. D. Story, Chief Purchasing Agent, Shell Oil Co., at a meeting of the American Petroleum Institute on February 24.

CLEVELAND ASSOCIATION EDUCATIONAL ACTIVITIES

The Purchasing Agents Association of Cleveland is cooperating in the presentation of a course in purchasing at Cleveland College, downtown center of Western Reserve University. The course is taught by A. F. Neinhuser, commissioner for equipment and supplies of the Cleveland Board of Education. The association is also sponsoring the advance class in industrial purchasing at Fenn College. Alan L. MacCracken, Purchasing Agent of the Ohio State Rubber Co., is instructing.

STEEL EXECUTIVE SPEAKS TO LOS ANGELES ASSOCIATION

J. Lester Perry, president of Columbia Steel Company, was guest speaker at a dinner meeting of the Purchasing Agents Association of Los Angeles, held February 12 at the Elks Club.

Mr. Perry discussed problems of the steel industry, including the critical scrap situation, gray market activities and exports. He said that the U. S. Steel Corp. has appropriated more than $120,000,000 of its new expansion program for the western states. He predicted that the program will bring steel-producing capacity west of the Rockies up to about 3,000,000 net tons of finished steel annually.

RHODE ISLAND ASSOCIATION HEARS GEORGE A. RENARD

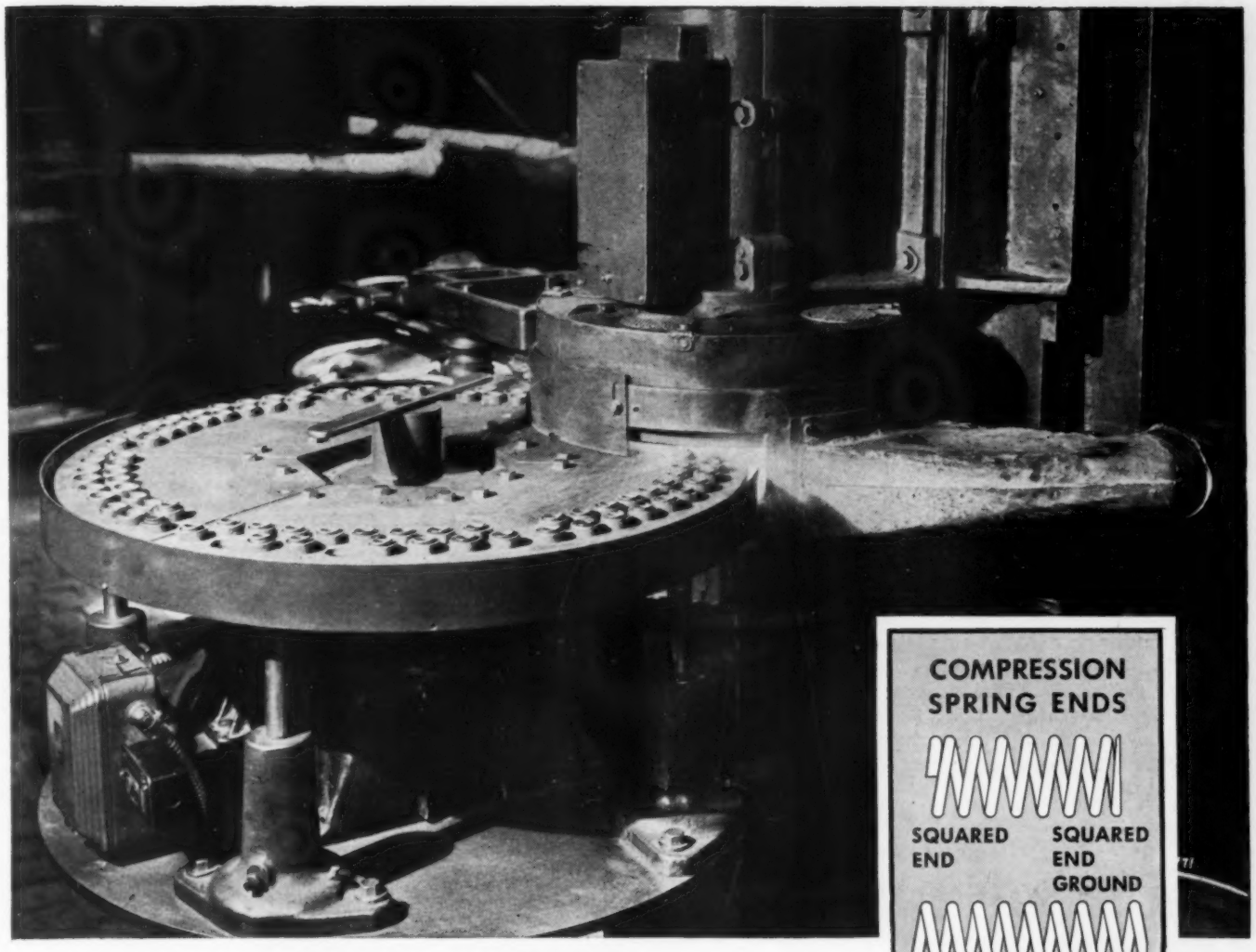
The regular meeting of the Rhode Island Purchasing Agents Association was held in the ballroom of the Narragansett Hotel on February 26. George A. Renard, executive secretary-treasurer of the National Association of Purchasing Agents was the guest speaker.

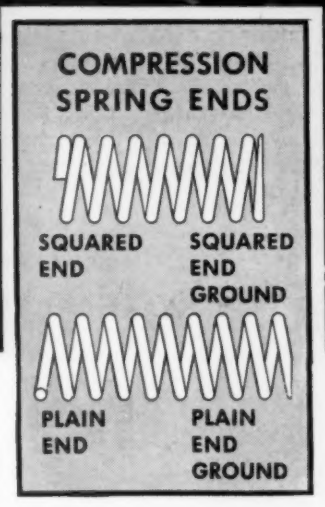
F.B.I. AGENT GUEST AT MARCH MEETING OF MILWAUKEE ASSN.

The regular meeting of the Milwaukee Association of Purchasing Agents was held on Tuesday, March 9 at the Milwaukee Elks Club. Principal speaker was Hugh K. Johnson, Scepial Agent in Charge, Federal Bureau of Investigation, U. S. Department of Justice. His subject was "Law Enforcement".

Joseph Nicholson, Purchasing Agent for the City of Milwaukee, has started the second semester of the class in industrial purchasing sponsored by the association at Marquette University. Fifty-six students,

(*Please turn to page 274*)





DESTINY THAT SHAPES OUR ENDS

THE WORK which a compression spring is destined to perform is often a factor in determining the type of end to be used. In a high speed valve spring, for example, a close wound coil added to each end permits grinding of squared ends for bearing surfaces that can stand sudden shock loads and the "surge" to which this type of spring is subjected.

Because accuracy is important, Wickwire employs automatic grinding equipment especially designed to produce flat parallel ends at right angles with the axis of the spring without distorting the end coils.

If you need springs or formed wires, Wickwire can serve in two ways. First, let us send you our free book, "Springs and Formed Wires." It's full of valuable data about spring selection and performance. Second, we offer the services of our spring and formed wire specialists in custom-tailoring the type of spring that meets your specific requirements. For a copy of our free book; for engineering help, or for quotations, write Spring Department, Wickwire Spencer Steel Division of C. F. & I., 2 New Bond Street, Worcester 6, Massachusetts.

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A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION • THE COLORADO FUEL AND IRON CORPORATION

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Other quality Wickwire Spencer Products include: Wire, Wire Rope, Metal Conveyor Belts, Chain Link Fence, Industrial Wire Cloth, Poultry Netting, Hardware Cloth, Insect Wire Screening, Welded Wire Fabric for concrete reinforcement.

IMMEDIATE DELIVERY... *Equipment for*
STORING AND HANDLING FLAMMABLE LIQUIDS

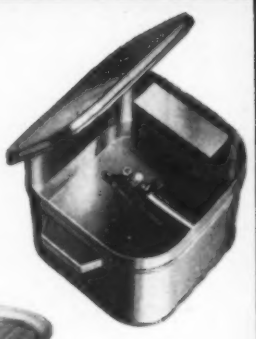
PROTECTOSEAL

WASH TANKS

Square construction for easy handling of basket. Fusible link causes cover to drop automatically in case of fire. Four sizes.

SPRAY GUN CONTAINER

Keeps guns in perfect condition, ready for use at any time. Lid cannot stand open. Holds 4 guns.



PLUNGER CANS

For moistening cleaning cloths or swabs safely and economically. Measured amount of fluid is forced up through perforated fire baffle by downward push. Any fire on dasher burns itself out. Five sizes.

FOR YOUR PROTECTION
get acquainted with the full line of specialized products, each designed for a specific task in safeguarding your property.

SUPPLY CAN

Approved by both U.L. and F.M., provides rapid fire-safe and wasteless way of dispensing all flammable liquids.

SAFETY CAN

U. L. and F. M. approved. Designed for maximum efficiency; greater safety; longer service. Check on the many important, patented features.

BENCH CAN

Minimizes waste and speeds cleaning and swabbing operations. Spring mounted perforated dasher serves as fire baffle. F. M. approved.

OILY WASTE CAN

Developed to meet service requirements vitally important to plant safety and efficiency. A completely new design approved both by U.L. and F.M.

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(Continued from page 272)

all of whom but two are carry overs from the first semester, have registered for the course.

Gil Hartman, a member of the association, recently conducted a meeting at the American Foundrymen's Association, conference at the Hotel Schroeder. His subject was "Pattern Purchasing". It was at the request of the Foundrymen's and Pattern Makers' Associations that the Milwaukee Association was invited to participate and present the problems of a purchasing agent in procuring patterns and castings.

EUROPEAN TRIP DESCRIBED TO CANTON ASSN. MEMBERS

Description of a trip taken by American Legion members through various European countries last summer featured a recent meeting of the Purchasing Agents Association of Canton. Frederick M. Broda, who made the journey, was the chief speaker, and described the itinerary of the group, reviewing conditions in the countries visited. A veteran of World War I, Mr. Broda noted the difference in the effect of the two wars. He expressed the opinion that anyone viewing the American cemeteries in Europe would be satisfied to leave the war dead where they rest.

STEEL INSTITUTE SECRETARY WILMINGTON ASSN. GUEST

Charles M. Parker, secretary of the American Iron & Steel Institute was the guest speaker at the February 23 luncheon meeting of the Purchasing Agents Association of Wilmington in the Hotel DuPont. Mr. Parker told the group that American steel production is greater that ever before and equals one half the world's capacity. He explained that steel shortages will be ended when the balance is restored between demand for certain types of steel and their supply. He said that the urgent steel needs of industry are being met but that "the more marginal wants are not being satisfied".

TRI-CITY ASSOCIATION SEES PAINT PROCESSING FILM

The "Paint Film" depicting the processing of pigments used in the manufacture of paints was shown at the February meeting of the Tri-City Association of Purchasing agents in the Fort Armstrong Hotel, Moline, Ill. The program was sponsored by R. L. Campbell of the New Jersey Zinc Co., and C. D. Horton, Moline Paint Manufacturing Co.

UTAH HOLDS JOINT MEETING WITH SALT LAKE ROTARY

The Purchasing Agents Association of Utah held a joint luncheon meeting with the Salt Lake City Rotary Club, in the Hotel Utah, Salt Lake City, on Tuesday, March 9. The affair was the association's educational meeting for March, and was arranged by L. P. Broberg, chairman of the

(Please turn to page 276)

PRICES CUT up to 11%

ON FLUORESCENT BALLASTS

CAT. NO. 58G677 NOW

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LIST PRICE REDUCTION ALONE OVER 8%!

GENERAL ELECTRIC has reduced prices on fluorescent ballasts up to 11 per cent since November 17, 1947. Price comparisons between November 15, 1947 and January 15, 1948 show reductions averaging over 8 per cent.

This is another example of G-E leadership in reducing your cost for high quality lamp-matched fluorescent ballasts.

Full information on current list prices can be obtained from your nearest G-E Apparatus Sales Office. For bulletin GEA-4950, describing the complete line of G-E ballasts, write *Apparatus Department, General Electric Co., Schenectady 5, N. Y.*

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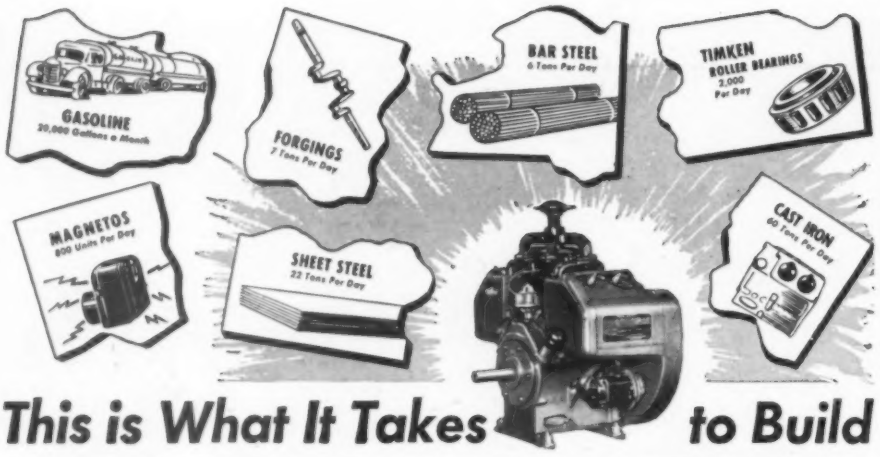

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Trainloads of cast iron, bar steel, sheet steel and drop forgings; thousands of Timken roller bearings, magnetos, carburetors, fuel pumps and many other parts and materials . . . including 20,000 gallons of gasoline per month simply for factory test runs . . . that's what it takes to build Wisconsin Heavy-Duty Air-Cooled Engines!

But above all this *quantity* is the *quality* that is the final product . . . the Heavy-Duty Air-Cooled Wisconsin Engines that are serving Industry so dependably, in so many ways . . . as integral power units on a great variety of equipment, delivering "Most Hp. Hours" of on-the-job power service.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 14, WISCONSIN

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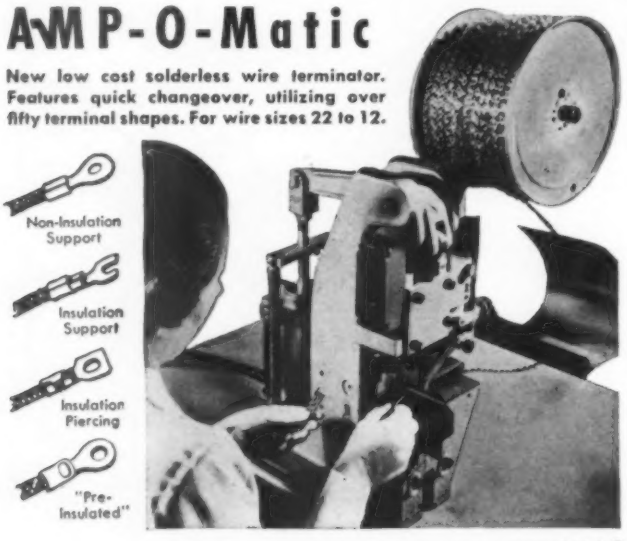
New low cost solderless wire terminator. Features quick changeover, utilizing over fifty terminal shapes. For wire sizes 22 to 12.



UP TO 2000 SOLDERLESS ELECTRICAL CONNECTIONS PER HOUR

AMP-O-Matic Details:

Terminals—ring-tongue, spade, splice, disconnect, furnished in pre-formed strip on handy reels.

Compact—small, lightweight, easily moved. Needs only 14" x 21" bench space.

Air-Operated—uses standard shop pressures (60 to 100 p.s.i.).

Readily Convertible—average mechanic can make changeover for various terminal shapes, also necessary maintenance.

Write for full information on how to put the AMP-O-Matic to work in your plant.

AMP AIRCRAFT-MARINE PRODUCTS INC.

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Sole Canadian Representative:

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(*Continued from page 274*)

educational committee. Howard Lewis, Professor of Marketing, Harvard University, was the featured speaker, on the subject "Men, Money and Materials".

Dr. Lewis warned his listeners to pay close attention to their requirements in anticipation of a possible business slump in the latter quarters of the year. He said that various factors show that changes are due in the nation's economy, which may result in an overall drop in business of from 20 to 25 per cent.

Among the indications he pointed out, were the trend in installment buying, the climb in business failures, the drop in retail trade and the fluctuations in the commodity markets.

A regular dinner meeting was held on Thursday, March 11 at Covey's New America Coffee Shop, Salt Lake City.

HEINRITZ GUEST SPEAKER AT READING ASSN. MEETING

The regular meeting of the Reading Purchasing Agents Association was held in the Iris Club on March 8. Guest speaker was Stuart F. Heinritz, editor of PURCHASING. Also guests at the meeting were 32 students of a business administration department at Albright College, and their department head, Prof. Donald S. Gates.

Mr. Heinritz advised the group to "forget the market level, get lower quotations, to do some real buying". He asserted that "no purchasing agent living ever beat the market on what he buys". "The market is made by the sales . . . the purchases affect, but never beat it", he added. Mr. Heinritz urged his listeners to "keep competition alive".

FIRST WESTERN PACKAGING EXPOSITION SET FOR AUGUST

The first Western Packaging Exposition and Conference on Packaging, Packing and Shipping will be held in the San Francisco Civic Auditorium August 10-13. Some 100 companies engaged nationally and regionally in the manufacture and distribution of machinery, equipment, materials and supplies and services in the fields of packaging, packing and shipping will exhibit. The exposition is the first major event of its kind ever projected for the far west.

NATIONAL ELECTRONICS CONFERENCE IN NOVEMBER

The National Electronics Conference, Inc., has announced that it will hold its annual technical forum at the Edgewater Beach Hotel on November 4, 5 and 6. W. C. White of General Electric Co., Schenectady, N. Y. has been selected as chairman of the board of directors for the current year. A program of approximately 50 technical papers covering all phases of electronics, together with exhibits of manufacturers' new electronic equipment, is being planned.

(*Please turn to page 278*)

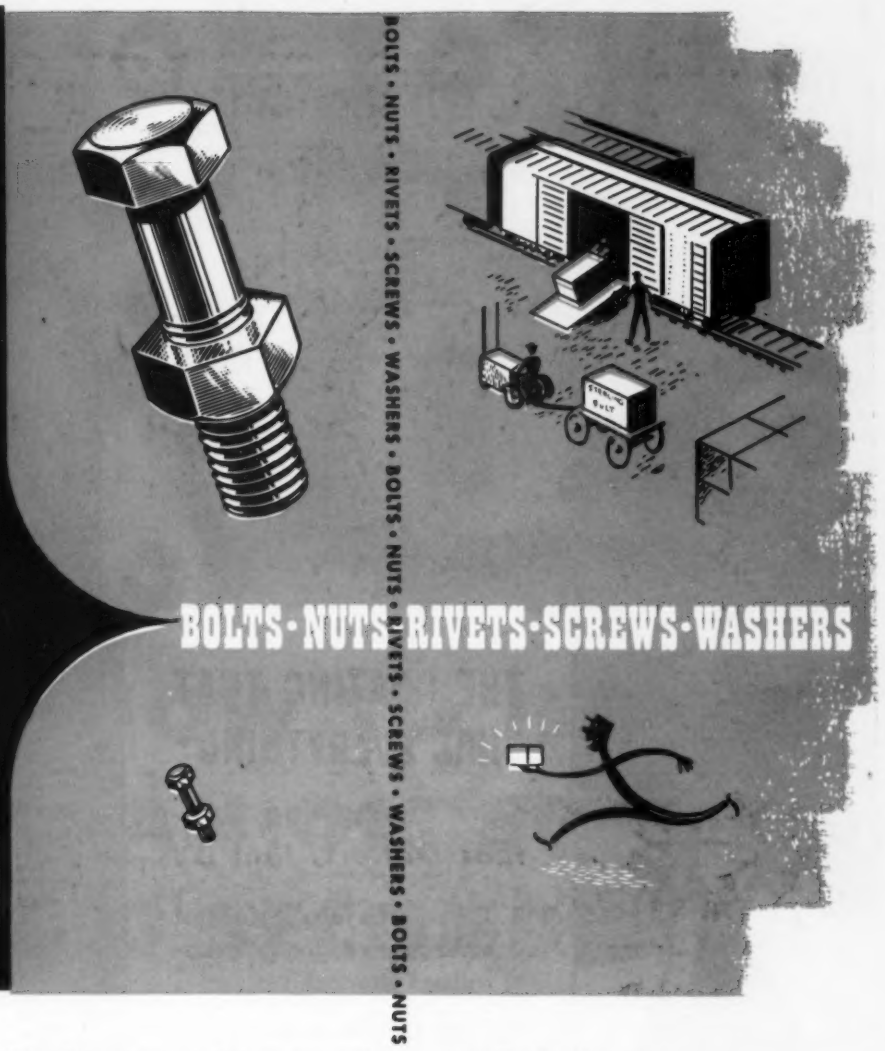
WHETHER YOUR

REQUIREMENTS ARE

LARGE

OR

small



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THE GRATING THAT HAS EVERYTHING

Everything that matters, that is!

1. One-piece electroforged steel construction for guaranteed strength!
2. Easy maintenance—paint reaches entire surface!
3. Maximum open area for light and air!
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FREE . . . So that you can have a "close-up" of Blaw-Knox Grating construction, write today for this "paperweight-size sample" on your business letterhead.

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BLAW-KNOX ELECTROFORGED STEEL GRATING

COLD CATHODE FLUORESCENT LIGHTING SHOW

The First Cold Cathode Fluorescent Lighting Exhibit is scheduled to be held at Grand Central Palace, New York, N. Y., July 6-10. The Fluorescent Lighting Association, 501 Fifth Avenue, New York, is preparing a program of technical and popular forums on cold cathode lighting to be held during the time of the show.

GENERAL BOX EXHIBITS MINIATURE "TORTURE CHAMBER"

The "Torture chamber" a scale model of the revolving drum box testing machine, featured the General Box Company's exhibit at the Materials Handling Exposition in Cleveland in January. The revolving drum, one of the many tests to which

"Torture Chamber" featured General Box Exhibit

shipping containers are subjected, showed how General Box applies its "part of the product" program in devcoping the correct package for a specific shipping purpose. Other items on display were miniatures of pallets, wirebound pallet boxes, wirebound crates, stitched panel crates, corrugated and cleated corrugated containers.

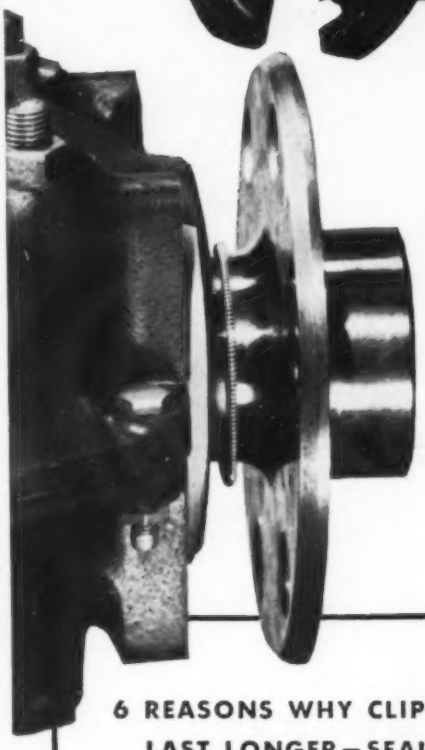
AMA ANNUAL PACKAGING EXPOSITION, CLEVELAND

Some 200 companies will exhibit packaging, packing and shipping materials, machinery and designs at the 17th annual Packaging Exposition and Conference of the American Management Association, which is to be held at the Municipal Auditorium in Cleveland, April 26-30.

In making announcement of the exposition, Henry J. Howlett, AMA secretary, pointed out "Many consumers—and even manufacturers and producers—do not realize how much packaging, packing and shipping developments have increased and facilitated the flow of goods in the nation's commerce and can, through mass distribution, enable cost reductions; or how much prevention of damage in transit and waste can be reduced; and how purchasing has been made easier with a consequent saving in time and money."

Almost two and a half acres of space will be utilized for the exhibition and demonstration of packaging, packing and shipping materials, machinery and designs at the exposition. There will be demonstrations of

(*Please turn to page* 280)



HOW TO INSTALL AN OIL SEAL IN 10 SECONDS FLAT

■ It *can* be done—even on an inaccessible shaft like the one pictured here—with a Johns-Manville split-type Clipper Seal. Just three simple steps complete the job:

(1) Hook the detachable garter spring around the shaft. (2) Spread the seal apart at the split as shown above, and slide it over the shaft. (3) Slip the garter spring inside its groove in the seal and press the assembly into the cavity.

That's all. Installation is actually a matter of seconds. Costly "down time" is reduced to a minimum. And you can remove the seal just as quickly and easily . . . and without damage.

Completely new in principle, Clipper Seals have no metal case. Their rigid heel and soft flexible lip are moulded into a single unit to provide a seal of superior lubricant-retaining, dirt-excluding qualities. The garter spring adjusts lip pressure, contributes to more effective sealing and longer life.

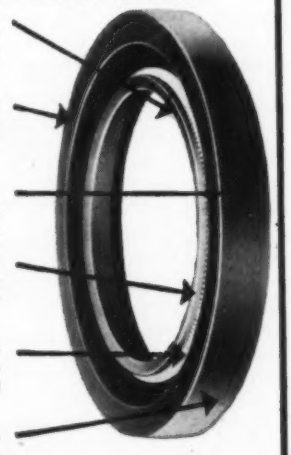
Clipper Seals are made in both split and endless types and are available for shafts up to 66″ in diameter. They are recommended for sealing against oil, grease, water, air, grit and coolants at operating temperatures up to 450° F.

For further information, write for brochure PK-31A. Address Johns-Manville, Box 290, New York 16, New York.

JOHNS-MANVILLE JM PRODUCTS

6 REASONS WHY CLIPPER SEALS LAST LONGER—SEAL BETTER

1. Various durometer lip stocks are available in a variety of designs to meet many different working conditions.
2. Clipper Seal's rigid heel provides a press fit in the cavity assuring a leak-proof joint at this point.
3. Clipper Seal's non-metallic moulded body is highly resistant to most forms of corrosion.
4. Every Clipper Seal has the same accurate concentricity because the I.D. and O.D. are moulded concentrically.
5. Action of garter spring adjusts lip pressure to provide more effective sealing and longer seal life.
6. Tough, one-piece construction permits easy removal without damage so that the seal can be used again.



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LARGE
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Bevel and mitre gears up to 60" dia. are cut on gear planers to accurate tolerances.

CUSTOM MADE GEARS
up to 145" diameter

You can save time, money and errors in your large and heavy industrial gear requirements with the prompt, custom service of SIMONDS GEAR. Within easy shipping distance of many heavy industry plants—with a personalized attention to your specific gear requirements—SIMONDS GEAR is able to assure you fast, accurate gear service for all heavier gear needs. Size range includes: Spur Gears up to 145"—Bevel and Mitre Gears up to 60"—Worm Gears up to 72"—also worms, worm gears, racks and pinions. Materials include: cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite. Place your next heavy gear inquiry with SIMONDS GEAR and test the difference!

Stock carrying distributors for Ramsey Silent Chain Drives and Couplings. V-Belts.

SIMONDS GEARS

THE SIMONDS
GEAR & MFG. CO.
LIBERTY at 25th • PITTSBURGH 22, PA.

(Continued from page 276)

the new uses of glass, metals, paper and paperboard, and wood, for packing and shipping products of all kinds and sizes.

At the concurrent AMA conference, warehousing methods and techniques, packaging perishable products, effective and economic methods of printing, package machinery maintenance, interior packing, and simplification of packaging specifications will be discussed.

* * *

MANY SMALL COMPANIES MAINTAIN OWN RESEARCH FACILITIES

Independent industrial research, usually considered on undertaking of large corporations only, plays so important a part throughout industry that about one-half of the products of smaller concerns were developed from their own research, it is revealed in reports from 983 manufacturers whose research programs were surveyed by the National Association of Manufacturers.

Results of the two survey questionnaires, published by the association as "Trends in Industrial Research and Patent Practices," show that manufacturers replying estimated their 1947 research expenditures at $207,384,188 or almost $26 million more than was spent in the preceding year.

The survey shows an increasing awareness on the part of industry of the need for research, on the part of both large and small concerns. Of the firms who replied 74 per cent said that they maintain their own research laboratories.

"Contrary to the popular belief that only large companies maintain laboratories," Howard E. Blood, chairman of NAM's Patents and Research Committee said, "the survey showed that 48 per cent of the companies having a research program, who reported gross sales of $250,000 or less, have their owkn laboratories, and 55 per cent of companies with sales less than $1,000,000 maintain their own facilities.

"The importance of research to small concerns, with sales under $500,000 a year, is shown by the fact that approximately one-half of them stated that all of their products were developed as a result of their own research."

Many companies reported that they planned to expand their research facilities within the next two years, though a number stated that their expansion plans have been hampered by the shortage of personnel and the high cost of construction.

While only one per cent of replies showed a research program based primarily on basic or fundamental research, and 56% described their programs as primarily for product improvement, a large proportion of the manufacturers said that they were working toward "long-team benefits" rather than immediate benefits.

The principal objective of 40% of companies replying was improvement of existing products, and an equal number reported that new product development was their prime research objective, many companies reporting that they believed that the development of new products is of greater importance to the long term-growth of the company.

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NUTS
BRASS and
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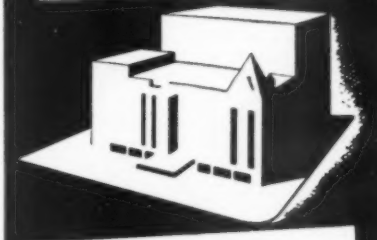

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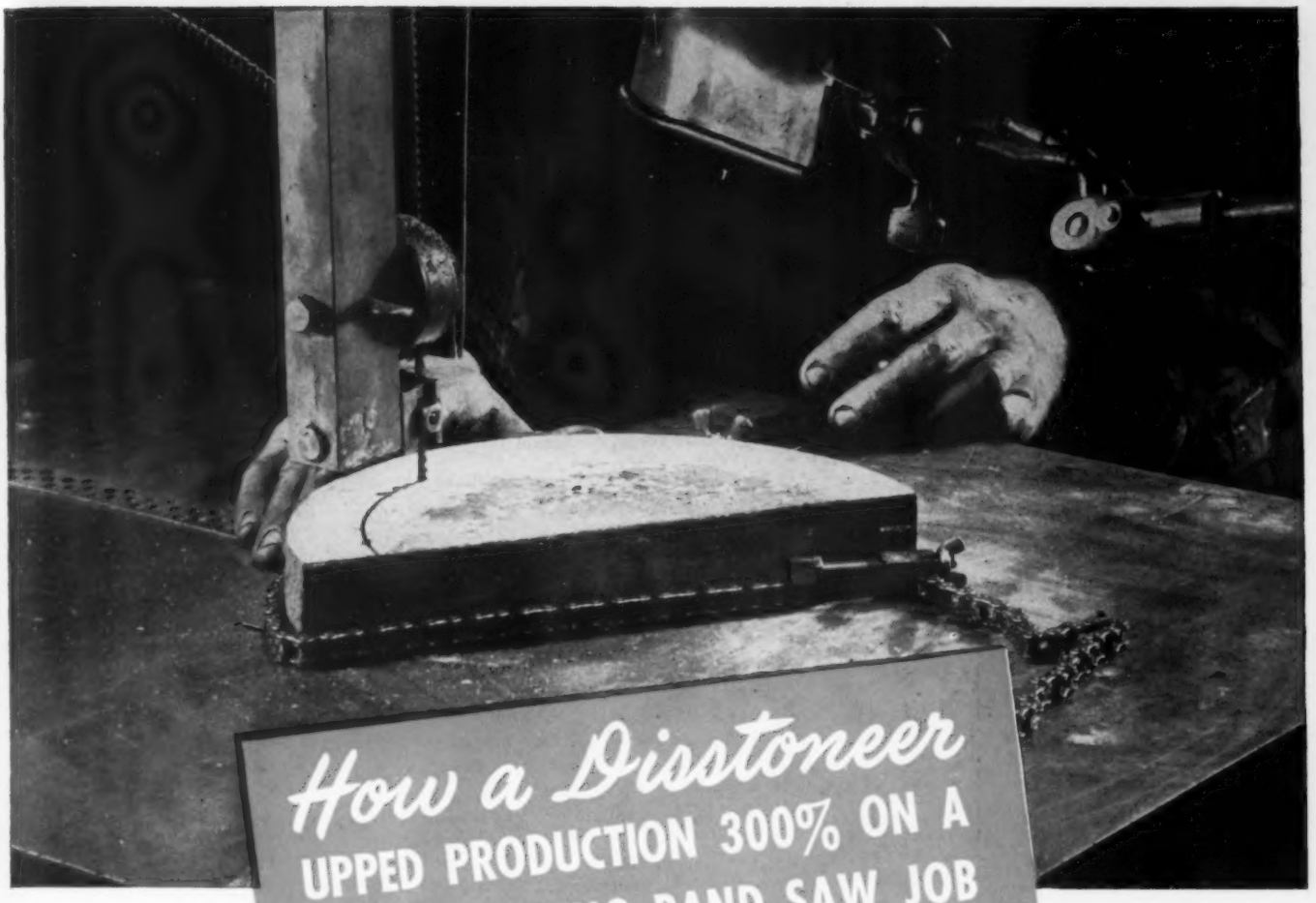


How a Disstoneer UPPED PRODUCTION 300% ON A METAL-CUTTING BAND SAW JOB

Cutting semi-circular units of 1½" boiler plate steel with Disston Hard Edge Flexible Back Band Saw Blade.

The material being cut was 1½" mild boiler plate (5.2 Brinell). Using a ½", 10-tooth blade, it took 1½ hours to saw out a complete unit and only one unit could be cut per blade. Since other operations were performed faster, a bottleneck resulted and highly paid workers were kept idle while waiting for the units to come through.

The Disstoneer* recognized a condition often met before . . . one that is frequently overlooked. The blade in size and number of teeth to the inch was not suited to the work. He recommended a Disston Hard Edge Flexible Back Band Saw Blade of a narrower width and a coarser tooth spacing. It was as simple as that . . . simple to the Disstoneer because he could draw from a long experience with metal-cutting operations of every kind. And the results . . .

Four complete units are now being cut with one blade—2 per hour, three times the production of the discarded blade. Wider tooth spacing provided more gullet room for chip clearance, permitting faster speeds and feeds. The bottleneck was eliminated. The narrower blade made cutting of the radius easier. Production costs and blade costs were reduced.

The Disstoneer may be able to do as much for you. His services are available without cost or obligation.

For further particulars, write direct or get in touch with your local Disston Industrial Distributor.

***DISSTONEER**—a man who combines the experience of Disston leadership and sound engineering knowledge, to find the *right tool* for you—to cut wood, to cut metal and other materials—and TO CUT YOUR COST OF PRODUCTION—*not only on special work, but on ordinary jobs as well.*

If you have a filing problem, you'll be interested in Disston Bite-Rite Files.

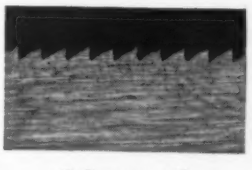
DISSTON BITE-RITE FILES ARE DIFFERENT

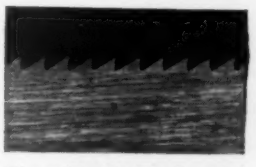
Disston Bite-Rite Files differ from ordinary files in design, construction and service qualities. One important difference is the tooth pattern. Instead of being in straight rows, the teeth are staggered, resulting in faster cutting and smoother work. Teeth are sharp, uniform and extra tough. They stand up long in hard service. Rounded gullets reduce clogging. All lengths, shapes and cuts . . . for all metals . . . for hand or machine use

Enlarged photographs looking into cutting face of teeth.

Ordinary type file with teeth in straight rows.

Disston Bite-Rite File with staggered teeth.





Ordinary type file: Clogging gullets.

Disston Bite-Rite File: Rounded, non-clogging gullets.

HENRY DISSTON & SONS, INC., 433 Tacony, Philadelphia 35, Pa., U.S.A.

PERSONALITIES *in the* NEWS

William H. Old has been appointed General Purchasing Agent for American Brake Shoe Company, New York, N. Y., succeeding Roger W. Batchelder, who has been named Assistant to the President of the National Bearing Division of American Brake Shoe Company.

William H. Old

Mr. Old, formerly Assistant General Purchasing Agent, has served in various purchasing capacities since he first joined the company in 1940. A native of Norfolk, Va., he is a graduate of Virginia Military Institute and also attended Harvard School of Business Administration. He will continue to be located in New York.

Mr. Batchelder has been with Brake Shoe since 1933. A native of North Reading, Mass., he attended Phillips Academy and Yale University. During the past year he has served as commanding officer of the 206th Air Service Group

Roger W. Batchelder

of the New York Air National Guard. In his new position he will be located at the division headquarters in St. Louis, Mo.

E. V. Purdy has been named Purchasing Agent of the Southern Pacific Railroad in New Orleans, La. Formerly Assistant Purchasing Agent, Mr. Purdy succeeds K. P. Chinn who was promoted to assistant to the executive vice-president after six years as Purchasing Agent. Mr. Chinn began his career with the railroad in 1912 as an assistant storekeeper.

Albert J. Kelly has been appointed General Purchasing Agent of Esso Standard Oil Company, New York, N. Y., formerly known as Standard Oil Co. of New Jersey. Mr. Kelly has been with the company for 27 years, all of which have been spent in the purchasing department.

Mr. Kelly is a graduate of Fordham Law School. From 1934 to 1941 he lectured on purchasing in the Navy Supply and Finance School conducted at Harvard University. For the past two years he has been chairman of the Oil Companies Buyers Group of the Purchasing Agents Association of New York.

Charles J. Reimer has been appointed General Purchasing Agent of SKF Industries, Philadelphia, Pa. Mr. Reimer, formerly procurement metallurgist for the ball and roller bearing firm, succeeds J. F. Whelihan, resigned.

Prior to joining SKF in 1944, Mr. Reimer was superintendent of the Heppenstall Company's forge shop at Eddystone, Pa. During the war, he was general superintendent of the Empire Ordnance Company of Philadelphia and for a number of years he was associated with the Midvale Steel Co. He is a graduate of St. Joseph's College, Philadelphia, where he specialized in chemical engineering.

Maurice G. Postley, past president and now honorary president of the National Institute of Governmental Purchasing, lectured in the graduate course in Public Administration at Syracuse University's Maxwell School of Citizenship and Public Affairs, during the week of March 15. Mr. Postley has also served as Secretary of the New York City Department of Health, Secretary of the Board of Education and Superintendent of School Supplies of the Board of Education in charge of purchasing.

John J. Connors has succeeded the late Clarence Wilcox as Purchasing Agent for A. Schrader's Son Division of Scovill Manufacturing Company, Inc., Brooklyn, N. Y.

H. R. Hemmings has been appointed Supervisor of Purchasing for the Tube Division of General Electric Company's Electronics Department. In this capacity he will be responsible for all purchasing and procurement activities of the division, which has plants at Schenectady, N. Y.;

H. R. Hemmings

Utica, N. Y.; Buffalo, N. Y.; Owensboro, Ky.; and Tell City, Ind. His headquarters will be at the Schenectady plant.

A graduate of St. Lawrence University with a B.S. degree, Mr. Hemmings has been a member of the company's traveling auditor's staff for the past two years. He was employed by G. E. in the Business Training Course at Schenectady in 1937 and held positions in the Statistics Division and Profit and Loss Section there.

A. N. Phillips has been named Director of Purchases for the South Wind Heater

A. N. Phillips

Division of Stewart-Warner Corporation, Indianapolis, Ind., according to an announcement by F. A. Hiter, senior vice-president at Stewart-Warner. He was formerly in the purchasing department of Frigidaire Corporation, and for 13 years

(*Please turn to page* 284)

ELIMINATES COSTLY CORROSION PROBLEM

Textile Manufacturer Changes to a "Job Proved" Sun Processing Oil and Cuts Production Costs

A manufacturer of cotton fabrics was having corrosion trouble on his textile machines. It resulted from the use of an expensive processing oil. Moreover, the oil had to be sprayed on the fibres by special rented equipment.

Changing to a "Job Proved" Sun processing oil, the manufacturer not only licked the corrosion problem, but was able to replace the rented equipment with low-cost, standard atomizing machines. In addition, there was a saving of $2,000 in two years on the cost of oil.

This is typical of the service rendered and the savings made possible in many different kinds of industrial plants where Sun petroleum products are used. In one year, an automobile manufacturer saved $1,440 by adopting Sun Tableway Lubricant on the slides of machine tools... a paper mill adopted an adhesive Sun grease that didn't drip, estimated a $2,900 saving in labor and cleaning costs... a coal mine saved $1,664 by changing to a Sun waterproof grease for mechanical loaders.

To get the latest information about Sun "Job Proved" products for your industry, call the nearest Sun Office, or write Department PU-4.

SUN OIL COMPANY • ***Philadelphia 3, Pa.***
In Canada: Sun Oil Company, Ltd.
Toronto and Montreal

SUN PETROLEUM PRODUCTS
"JOB PROVED" IN INDUSTRY

SUNOCO

Purchasing Agent for Schwitzer-Cummins Company, prior to his present appointment.

Mr. Phillips is vice-president of District 4, National Association of Purchasing Agents, and a past president of the Purchasing Agents Association of Indianapolis.

Quentin Marshall has been named Chief Purchasing Agent, and Charles E. Gilbert, Assistant Purchasing Agent, of Marshall Auto Stores, Kansas City, Mo.

Andrew W. Engel has been appointed Purchasing Agent of the Ace Manufacturing Corporation, Philadelphia, Pa.

Bern C. Jaeger has succeeded John H. Harvey as Purchasing Agent for the state of Ohio. Mr. Jaeger served three years with the Navy as civilian purchasing agent assigned to the Naval Air Station at Fort Lauderdale, Fla., and later to the Naval Air Gunnery School at Miami. He is a graduate of Ohio State University school of business adminisration.

Charles A. Cross has been appointed Purchasing Agent for the City of Houston, Tex. He was formerly purchasing agent with the Kuhn Paint Co.

Gus Rock Leach has been named Assistant to the Purchasing Agent for A. E. Staley Manufacturing Company, Decatur, Ill., according to an announcement by H. H. Hise, Chief Purchasing Agent. Mr. Leach has had a wide range of experience in purchasing and was a materials expeditor for war plants during the war.

Thomas Crawford has succeeded Fred W. Witherington as Purchasing Agent of the Southern Car and Manufacturing Company, Birmingham, Ala. He was for three and a half years in the company's warehouse sales department. Mr. Witherington has been transferred to the Decatur Iron and Steel Company, Decatur.

F. W. Pearce has been appointed Purchasing Agent for the National Electric Coil Co., Columbus, O., succeeding J. W. Roberts, who has entered another business.

Theodore Williams has succeeded Lawrence Jackson as Purchasing Agent for the American Radiator and Standard Sanitary Manufacturing Co., Columbus, O.

Leonard F. Hanna has assumed the duties of Purchasing Agent with the Angier Corporation, Framingham, Mass., manufacturers of building and industrial waterproof papers. He succeeds E. D. Cookson who has been transferred to the sales department.

Jefferson E. Williams, recently renamed Purchasing Agent of Johnson & Bassett, Inc., Worcester, Mass., was also elected clerk of the corporation.

Frank M. Faucett, retiring Assistant Purchasing Agent of the Winchester Repeating Arms Company division of Olin Industries, Inc., New Haven, Conn., was honored with a testimonial dinner recently. Over 200 executives, associates and friends attended the affair, at which Robert Swanton, Winchester Director of Purchases was toastmaster. Mr. Faucett, who joined the company in 1915, was presented with a gold watch and a purse.

Walter D. Appel, former chief engineer, has been appointed Director of Purchasing for Willys-Overland Motors, Toledo, O., it has been announced by Arthur J. Wieland, executive vice-president.

A Willys-Overland executive since May, 1946, Mr. Appel was in charge of product development as assistant to the vice-president in charge of engineering until January, 1947, when he was appointed chief engineer for the company. For many years he was executive engineer with General Motors and was

Walter D. Appel

product development engineer for the overseas operation division of General Motors at the time he joined Willys-Overland. He was chief engineer for Vauxhall Motors Ltd., Luton, England, and technical director for the Adam Opel, A. G. in Russelsheim, Germany. A graduate of the Case Institute of Technology, Mr. Appel is a member of the Society of Automotive Engineers and the Engineering Society of Detroit.

Under the newly-appointed Director of Purchasing, George J. Edellstein continues as General Purchasing Agent for the company. Appointed to that post a year ago, Mr. Edellstein has been associated with Willys-Overland since 1923.

M. G. Johnson has been named Supervisor of Purchasing, household refrigerator division, Erie, Pa., Works, General Electric Co. Mr. Johnson joined G. E. at Bridgeport, Conn., in 1935, in the advertising division. He was appointed production supervisor of that division in 1940, and in 1942 transferred to central purchasing at Bridgeport. He had been performing special assignments in the purchasing division until his present appointment.

N. Martin Steffens has succeeded P. J. Kuipers as Director of Purchases of Geuder, Paeschke & Frey Co., Milwaukee, Wis. Mr. Steffens, who has been with the company for the last thirty years in the Purchasing Department, was formerly Assistant Director of Purchases. Mr. Kuipers, who has been with the company for thirty-two years, will remain in an advisory capacity.

William Keady has been named as Purchasing Agent for the Pittsburgh Brewing Company, Pittsburgh, Pa., in addition to his present position as assistant to the president. He has been with the company since 1917.

Stanley W. McKenzie, Director of Purchasing, U. S. Rubber Co., recently participated in a seminar on marketing conducted by Columbia University, New York, in connection with a "career clinic" for students who intend to enter business. Mr. McKenzie discussed the purchasing function, and told the students of job opportunities that exist in the field.

William J. Keim has been made Purchasing Agent of Standard Brands, Inc., New York, N. Y., succeeding Albert Martin, retired. Mr. Keim has been with Standard Brands and its predecessor, Fleischmann Yeast Co., for 39 years.

Carl A. Ilgenfritz, Vice President-Purchases, U. S. Steel Corp. of Delaware, has been appointed by ex-president Herbert Hoover to a special committee of the Commission on Organization of the executive branch of the national government.

Leon Norfleet, formerly Assistant Purchasing Agent for the Reynolds Metals Company, Louisville, Ky., has been named industry manager of the marine division of the company. Mr. Reynolds has been with Reynolds since 1941, with the exception of two years he spent in the Navy. He held purchasing posts in various parts of the Reynolds organization until his present appointment.

James B. King has been appointed State Purchasing Agent of Alabama. He was formerly superintendent of Autauga County public schools.

Norman Lawson has been named Purchasing Manager of Franklin Baker Division, General Foods Corp., Hoboken, N. J. He was formerly with American Airlines.

Ted C. Gorman has been appointed head Purchasing Agent of Edward Ermold Co., New York, N. Y., manufacturers of automatic labeling equipment. He was formerly Purchasing Agent of the International Mutoscope Corp., Long Island City, N. Y.

J. M. Cochrane, Manager of the Purchasing Department of Ford Motor Company of Canada, Ltd. has been appointed a director of the company.

Thomas H. McKinnon has joined Edwin M. Knowles China Co., East Liverpool, O., as Assistant Purchasing Agent, under H. R. Burson, Purchasing Agent.

Marshall E. Munroe has been named tractor Purchasing Agent for Harry Ferguson, Inc., Detroit, Mich. He will be in charge of procurement of all components for the Ferguson tractor to be built in a new plant now under construction. Mr. Munroe has been with Ferguson since 1939, as factory representative in Cleveland, O.

J. J. Friedrich has been elected Purchasing Agent of Shafer Bearing Corp., Downers Grove, Ill.

(*Please turn to page* 286)

Controlled Quality

Saves Piping Construction Costs by Assuring Complete

in the physical dimensions of LADISH SEAMLESS WELDING FITTINGS

Reduced erection costs and freedom from delays result from easy and accurate piping makeup when you install Ladish Controlled Quality Seamless Welding Fittings.

Ladish Controlled Quality means that in addition to Metallurgical integrity, every fitting before it is marked with the Ⓛ trademark must pass numerous rigid physical inspections to assure complete accuracy. Wall thickness, radii, bevel, circularity, geometric accuracy and dimensions are painstakingly checked with precision instruments to make certain they meet or exceed all applicable codes and standards.

CONTROLLED QUALITY RULES THIS PLANT

There is no compromise with quality in the modern Ladish plant. Continuous, progressive inspections maintain the rigid standards of Ladish Controlled Quality . . . *quality* that merits your complete confidence.

A COMPLETE LINE PRODUCED UNDER ONE ROOF
. . . ONE RESPONSIBILITY

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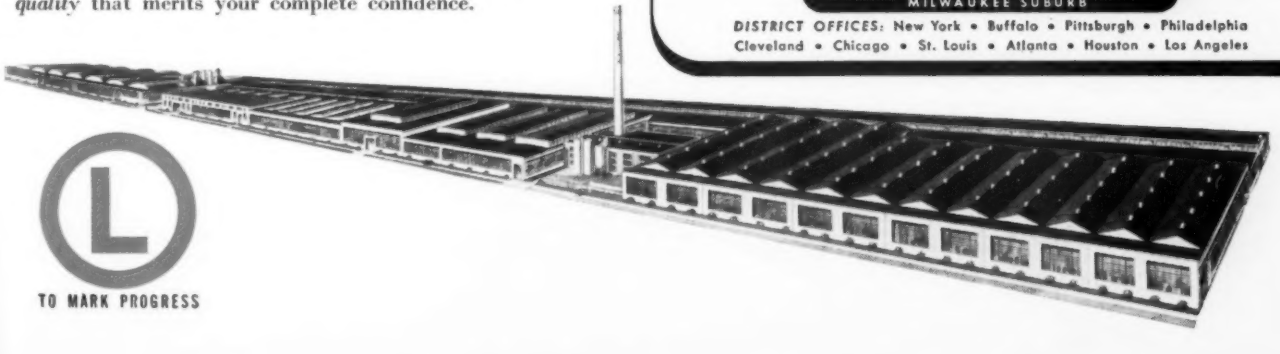
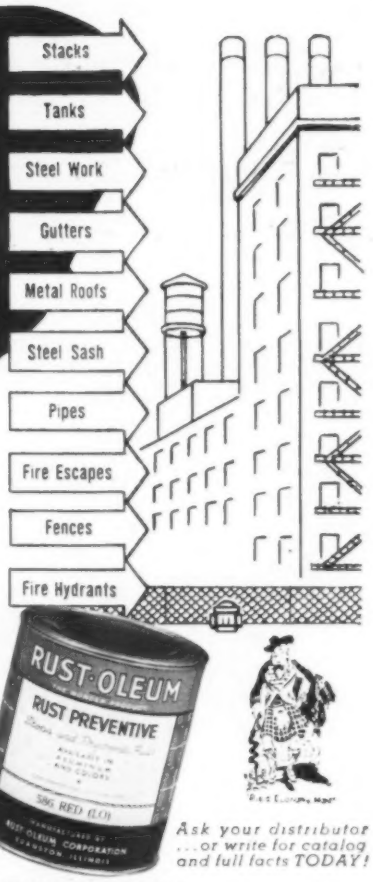


Ⓛ
TO MARK PROGRESS

STOP RUST
—and at lower cost with
RUST-OLEUM



Rust-Oleum is a positive rust preventive. Prepared with scientifically-processed fish oil, it's available in a variety of colors for every industrial use.

Rust-Oleum can be applied directly over *rusting metal*—by brush, dip or spray. No sand-blasting or chemical "dissolvers" are necessary. Simply wire brush surface to remove dirt, scale, etc.

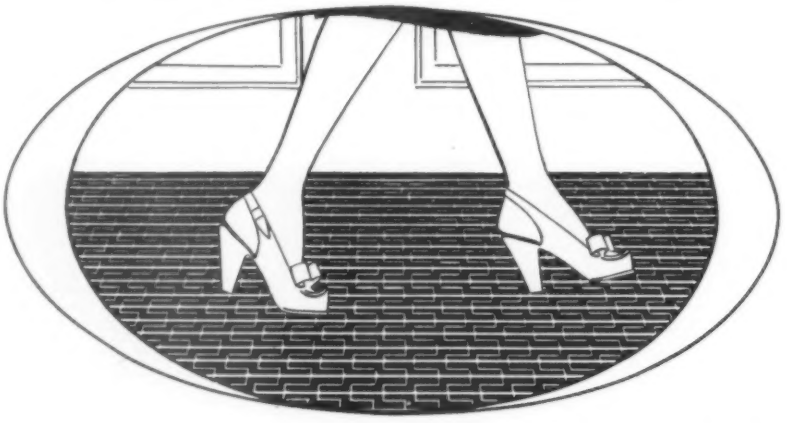
Rust-Oleum covers 30% more area per gallon . . . goes on 25% faster . . . *outlasts ordinary paints two to ten times*. This means lower maintenance cost on every job.

Ask your distributor . . . or write for catalog and full facts TODAY!

RUST-OLEUM CORPORATION
2439 Oakton Street, Evanston, Illinois

THE *Safe* OPEN STEEL FLOORING IS TRI-LOK

No object over ½ square inch can pass through super-safe U-Type Tri-Lok Flooring. Fabricated without bolts, rivets or welds, it is unsurpassed for plant installation, walkways, loading platforms. Guarantees efficient distribution of concentrated loads . . . maximum free opening for light and air. Write for Bulletin 1140.



DRAVO CORPORATION
NATIONAL DEPARTMENT
1103 PITT BANK BLDG., PITTSBURGH 22, PA.
(Distributor for THE TRI-LOK COMPANY)

DRAVO

A. GRANT CLARK, SR.

A. Grant Clark, Sr., Purchasing Agent and Assistant Secretary of the McWilliams Dredging Company, New Orleans, La., died on February 10 of injuries received in an automobile accident. He was 47 years old.

Mr. Clark had been an active member of the New Orleans Purchasing Agents Association for many years, served as president of that organization, and had twice been chosen as vice-president of the National Association of Purchasing Agents for District 7. He was interested in numerous civic projects, and secretary of the Light House for the Blind in New Orleans. He was a former board member of the Delgado Trade School, a member of the New Orleans Association of Commerce, the Young Men's Business Club and the New Orleans Athletic Club.

He is survived by his widow; a son; a brother and a sister.

AMONG THE COMPANIES YOU BUY FROM

Pittsburgh, Pa.—Pittsburgh Plate Glass Co. A. W. Reynolds has been appointed assistant to the executive sales manager for Southern Alkali Corporation and the Columbia Chemical Division of the company.

Beaumont, Tex.—The Parker Appliance Company. The Standard Brass & Manufacturing Co. has been named as distributor for the Parker line of tube fittings, valves and accessories for hydraulic and fluid-handling systems.

Louisville, Ky.—Link-Belt Company. A sales office has been established here at 136 South Fourth St., with Emmart La-Crosse, Jr. as district sales manager in charge.

Harrisburg, Pa.—Daystrom Laminates, Inc. William E. Brackett has been named sales manager of the company, an associate of ATF Incorporated, Elizabeth, N. J.

Chicago, Ill.—The Bellows Company. J. James Mudd, formerly assistant sales manager of the company, is now regional sales manager of the Midwest Division.

Wethersfield, Conn.—Hendrick Manufacturing Co. Harold A. Jope is now the company's sales manager for the western half of Connecticut. The firm makes perforated metals, screens and open steel flooring.

Houston, Tex.—Hardinge Company, Inc. Chavigny Company has been appointed sales agent for Hardinge pulp and paper water works, and sewage equipment in southern Texas.

Atlanta, Ga.—The Upson Company. Charles G. Ostertag has been named sales manager for the central division of the company.

(*Please turn to page 288*)

How to Add Rubber Research Facilities to Your Plant

[WITHOUT ONE CENT OF INVESTMENT BY YOUR COMPANY]

"Ohio Rubber Research" in action. Partial view of testing laboratory shown above.

View at left shows one of the research laboratories at Willoughby, Ohio.

● Think of having extensive rubber research facilities as an integral part of your company without the attendant cost. That is how we like to have our customers feel about the standard of co-operation they receive from our research and testing laboratories.

The ever-widening experience of our technical staffs offers you the satisfying conviction that YOUR problems in rubber and rubber-like materials will be given qualified attention. Among current activities of "Ohio Rubber Research" are such important techniques as evaluating and testing of rubber compounds under dynamic conditions; curing of rubber with dielectric heat; and progressive developments in the field of injection and transfer molding.

Our representative in your area will be glad to discuss details of our complete facilities and qualifications to serve you—from research through every step of engineering and manufacturing mechanical molded and extruded rubber parts to your specifications.

This is the 3rd of a series of messages relating to:

THE OHIO RUBBER COMPANY

WILLOUGHBY, OHIO

OHIO RUBBER CO

FACTORIES: WILLOUGHBY, OHIO • LONG BEACH, CALIF. • CONNEAUTVILLE, PA.
BRANCH OFFICES: DETROIT • NEW YORK • CHICAGO • INDIANAPOLIS • CLEVELAND • BOSTON

Reduce fatigue-loss and improve morale in your office, factory or institution by keeping the air in motion.

Many production and institution managers have increased efficiency with the aid of dependable Emerson-Electric Air Circulators and Exhaust Fans. A continuous flow of air is stimulating, healthfully refreshing—good business.

DIRECT-DRIVE EXHAUST FAN

Get the Facts . . .

Ask your electrical supplier to show you the efficient and economical Emerson-Electric Fans best suited to your particular air-moving needs. Or write for free Exhaust and Ventilating Bulletin No. T-49.

BELT-DRIVE EXHAUST FAN

THE EMERSON ELECTRIC MFG. CO.
ST. LOUIS 21, MO.

EMERSON ELECTRIC
MOTORS · FANS — APPLIANCES

Detroit, Mich.—Lester-Phoenix, Inc. Thoreson-McCosh, 1115 Book Building, is now representing the company in the Detroit area.

Pittsburgh, Pa.—American Wheelabrator & Equipment Corp. George F. Burditt has been named sales engineer to join John N. Harper in representing the company in the Pittsburgh area.

New York, N. Y.—Virginia Smelting Co. G. V. Rittenhouse is now sales representative for the company's industrial chemicals in the New York area.

San Francisco, Calif.—General Electric Co. Allen A. Olsen has been appointed Pacific district representative for General Electric wire and cable.

Chicago, Ill.—Joseph T. Ryerson & Son, Inc. J. L. McDermitt has been appointed western sales manager of the company's Glyco-Ryertex division, specializing in the

J. L. McDermott

sale of Glyco babbitt metal and Ryertex non-metallic bearings. He supervises sales in the area west from Pittsburgh to the Pacific Coast.

Detroit, Mich.—Simonds Abrasive Co. W. E. Byrne has been named district sales manager for the Detroit area, in addition to his similar capacity for the Chicago territory. He will continue to be located at the company's branch warehouse, 127 So. Green St., Chicago.

New York, N. Y.—Hercules Powder Co. Jordan P. Snyder has been transferred here from St. Louis as technical sales representative in the company's synthetics department.

Schenectady, N. Y.—General Electric Company. E. A. Green has been appointed manager of sales for the company's Apparatus Department.

Chicago, Ill.—Darnell Corporation Ltd. C. B. Johnson has been named division manager of the Darnell office here, succeeding the late L. J. Clarke.

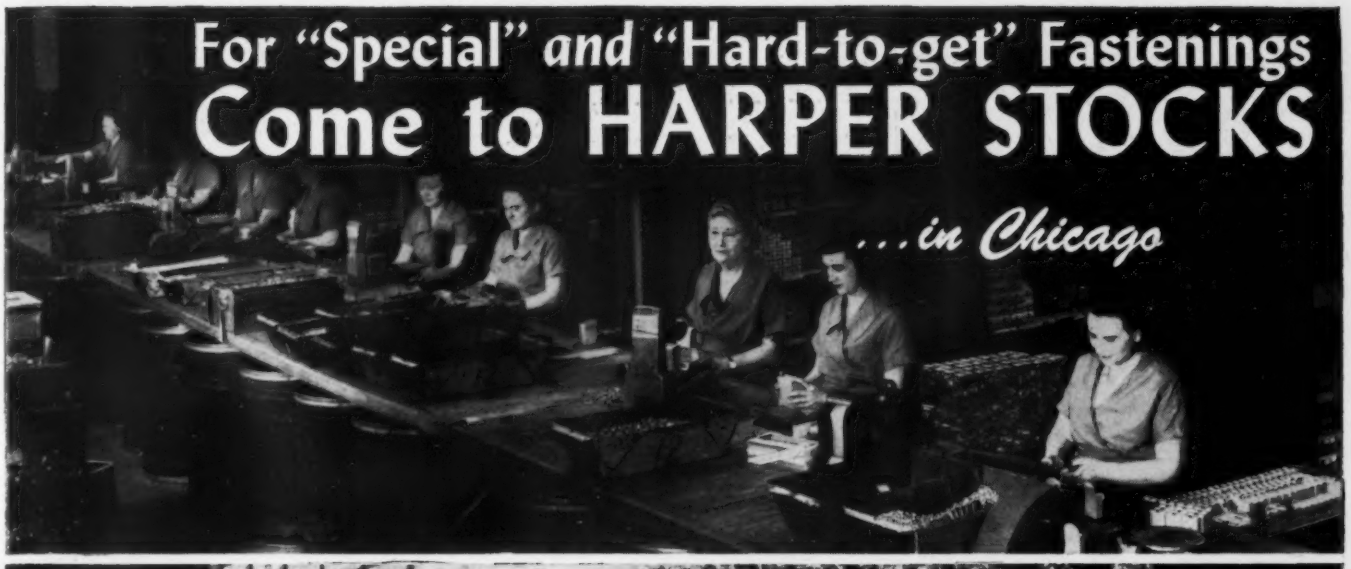
Passaic, N. J.—The Okonite Company. H. A. Earley has been appointed acting manager of the company's tape division, succeeding the late N. Lincoln Greene.

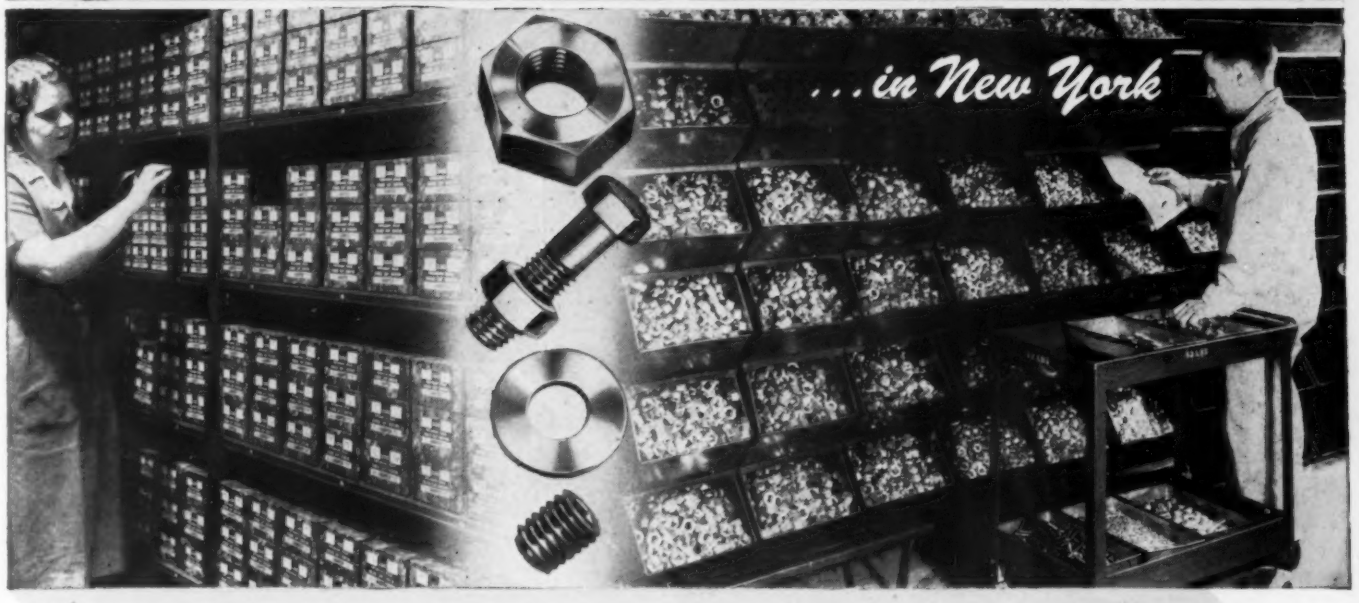
Oaklyn, N. J.—John S. Barnes Corp. The H. E. Stone Supply Co., 2 East Haddon Avenue, now represents Barnes in the central Atlantic states.

(*Please turn to page* 290)

For "Special" *and* "Hard-to-get" Fastenings

Come to HARPER STOCKS





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Nuts
Screws
Washers
Rivets
Nails
in
Brass
Bronzes
Monel Metal
Stainless Steels

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Over **5000** different types and sizes of non-ferrous and stainless steel fastenings are carried in Harper stocks at New York and Chicago **for immediate shipment.** Many are often considered "special" or "hard-to-get"—but Harper has them; and they are in stock for you because of a conistent, 25-year policy of constantly adding odd and unusual items to stock.

All Harper fastenings are corrosion resistant; many are non-magnetic, non-sparking; can be used again and again, give longer service, speed dis-assembly, stand up under adverse conditions where other fastenings "freeze" or fail.

Phone or Wire for "special" or "hard-to-get" fastenings for immediate shipment from stock—and write for the Harper catalog. It gives complete specifications and prices on the widest assortment of non-ferrous and stainless steel fastenings available.

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HARPER SPECIALIZES IN EVERLASTING FASTENINGS*
Reg. U. S. Patent Office

Darnell Casters

It's easy to select the right caster to meet your exact requirements from the Darnell line. There are nearly 4000 models from which to choose.

DARNELL CORP. LTD.
LONG BEACH 4, CALIFORNIA
60 WALKER ST., NEW YORK 13, N.Y.
36 N. CLINTON, CHICAGO 6, ILL.

Cleveland, O.—Waltham Grinding Wheel Co. Harry M. Hubbard has been named district representative for the Cleveland and northeastern Ohio territory.

New York, N. Y.—Continental Can Co. John S. Devlin has been appointed product sales manager for steel containers.

Harrison, N. J.—Worthington Pump and Machinery Corporation. Frank J. Whelan has been elected a vice-president of the corporation. He will be in charge of industrial and oil field merchandising activities. He will be responsible for sale of Worthington products through industrial and automotive dealers, the sale of power-transmission equipment, and sales to other manufacturers of equipment incorporating the company's products.

Frank J. Whelan

Pittsburgh, Pa.—The Watson-Standard Co. John J. Hart, Jr. has been named sales manager of the company's industrial safety products division.

Chicago, Ill.—Pennsylvania Salt Manufacturing Co. Hugh R. Bishop has been named sales representative in the Chicago territory for the heavy chemicals division.

Baltimore, Md.—Eastern Stainless Steel Corp. Robert F. Johnson has been appointed assistant general sales manager.

Milwaukee, Wis.—The Louis Allis Co. Louis Allis, Jr. has been elected to the newly created post of vice-president in charge of sales.

Pittsburgh, Pa.—Lincoln Electric Company. H. E. Cable has been named district manager of the company's office here.

Los Angeles, Calif.—Engineering Products Co. Howard Ledeen now heads all sales of Ledeen heavy duty cylinders for the company.

Chiago, Ill.—Kester Solder Co. George R. Hamilton has succeeded F. E. Kaeppel as direct factory representative for Illinois, Indiana and Wisconsin. L. Upgren has been made sales manager for these states, as well as Minnesota and the Dakotas.

Toledo, O.—The National Supply Company. H. E. Heywood has been named manager of the general sales office.

Los Angeles, Calif.—Champion Forge Co. District Steel and Equipment Co., 4536 District Street, has been named exclusive distributor of Champion forgings in the state of California.

Indianapolis, Ind.—The Baker-Raulang Co. Hooper-Green Company, 1039 North Pennsylvania Street, has been appointed district sales representative in the Indiana territory for the Baker-Industrial Truck Division.

San Francisco, Calif.—Shell Chemical Corporation. Barclay K. Read, formerly assistant sales manager, has succeeded Sidney S. Lawrence as sales manager for the western division. Mr. Lawrence has retired after 18 years' service with the company.

New York, N. Y.—Pennsylvania Transformer Co. A company sales office has been opened at 25 Broad Street, with E. S. Banghart as manager of the New York district.

Amarillo, Tex.—Allis-Chalmers. David R. Boise, formerly of the San Antonio district office, has been named manager of the company's Amarillo district office.

Wilmington, Del.—Link-Belt Company. A district sales office has been established at 805 Orange St., with William H. Kinkead as district sales manager.

Chicago, Ill.—Shakeproof Inc. Charles F. Keyser, Jr. has been appointed manager of distributor sales.

Portland, Ore.—Monsanto Chemical Company. A sales office has been established at 421 Southwest Sixth Avenue. It is staffed by Baxter Pearson, chemical and plastic sales, and W. W. Hayes, coating and adhesive sales.

St. Louis, Mo.—Bemis Bro. Bag Co. Walter A. Kamp has been named sales manager of the company's Paper Specialty Plant here. H. C. Davis has been appointed manager of the plant.

Walter A. Kamp

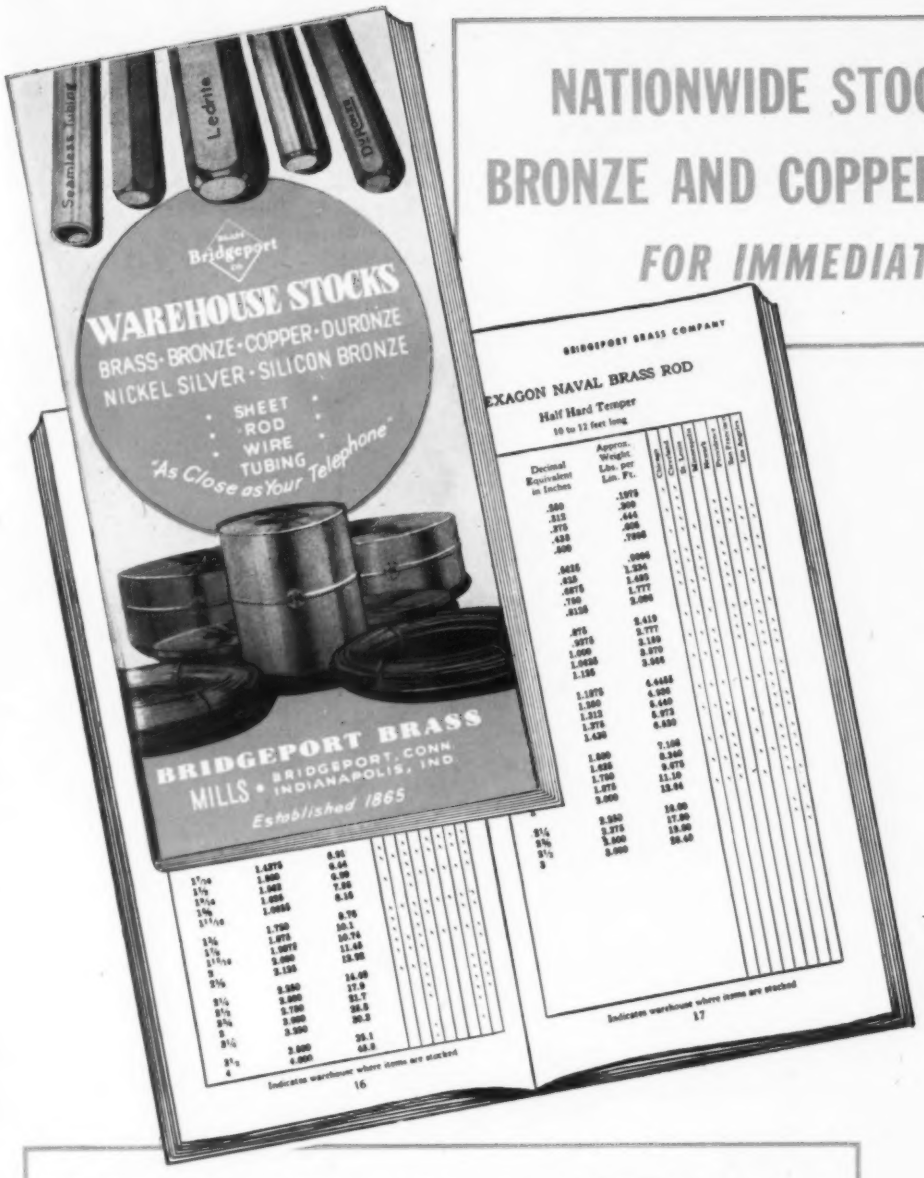
New York, N. Y.—Votator Division, Girdler Corporation. Jack K. Kennedy has been assigned to the staff of Sam N. Welsh, eastern sales manager, 150 Broadway.

Matawan, N. J.—Hanson-Van Winkle-Munning Company. Robert M. Norton has been transferred to company headquarters here where he will be engaged in activities relating to the sale of electroplating and polishing equipment and supplies.

(*Please turn to page 292*)

NATIONWIDE STOCKS OF BRASS, BRONZE AND COPPER MILL PRODUCTS

FOR IMMEDIATE DELIVERY



This new BRIDGEPORT BRASS Warehouse Stock Manual shows at a glance all materials carried for customer convenience and quick delivery—at each of the Bridgeport warehouses throughout the country.

It lists every type of alloy . . . in sheet, strip, rod, wire and tube form that Bridgeport stocks in the warehouse nearest you!

Thus with this manual, you have always available a ready reference to stocks that are on hand for prompt or rush delivery in limited quantities to your plant while you are awaiting mill shipments from our Bridgeport or Indianapolis mills.

Bridgeport's new warehouse stock list, just off the press, carries a wealth of technical information as well as convenient tables of weights, temperatures, gauges, measures, etc.

To get your copy simply address your request on your business letterhead to the Bridgeport Brass Company office *nearest* you.

Write the nearest Bridgeport Office for your FREE *copy of this* New Warehouse Stock List *for every user of brass mill products*

Call Your Local Office for Warehouse Service

Warehouse and Jobber Stocks Available for Prompt Delivery

BRANCH OFFICES AND ★WAREHOUSES

Atlanta 3, Georgia...701 Volunteer Building
Boston 16, Massachusetts...524 Statler Bldg.
★ Chicago 32, Illinois.....3453 W. 47th Place
Cincinnati 2, Ohio.....1703 Carew Tower
★ Cleveland 6, Ohio .....1921 E. 119th Street
★ Denver 2, Colorado .....1962 Blake Street
Detroit 26, Michigan.....2328 Buhl Bldg.
Grand Rapids 2, Mich..510 Assoc. Com. Bldg.
★ Houston 1, Texas.....2216 Walker Avenue
Indianapolis 4, Indiana..Circle Tower Bldg.
Jacksonville, Florida, 5133 Appleton Avenue
★ Los Angeles 12, California, 130 S. Hewitt St.
Milwaukee 2, Wisconsin, 715 N. Van Buren St.
★ Minneapolis 1, Minnesota, 100 N. Second St.
★ Newark 8, New Jersey .... 325 Jelliff Avenue
New York 17, New York..420 Lexington Ave.
New York—Jobber Stocks Available
Philadelphia 3, Penn....Broad St. Sta. Bldg.
Pittsburgh 19, Pennsylvania, 1322 Gulf Bldg.
★ Providence 3, Rhode Island...60 Clifford St.
Rochester, New York, 816 Reynolds Arc. Bldg.
★ St. Louis 3, Missouri.....2135 Delmar Blvd.
St. Paul 5, Minnesota...703 Ashland Avenue
★ San Francisco 3, California...1155 Bryant St.
Washington 5, D. C..616 Southern Building

BRIDGEPORT BRASS COMPANY, Bridgeport 2, Conn. • *Established 1865*

Mills at Bridgeport, Connecticut, and Indianapolis, Indiana. In Canada—Noranda Copper and Brass Limited, Montreal

"Bridgeport" BRASS CO.

Brass-Bronze-Copper-Duronze

STRIP ROD WIRE TUBING

BRIDGEPORT BRASS

WHY USERS SAY
"THERE'S NO 'OR EQUAL' FOR
S.S.WHITE FLEXIBLE SHAFTS"

YOUR FINGERS WILL TELL THE DIFFERENCE

A PRINCIPAL requirement in flexible shafts for remote control is smooth, easy, jump-free operation in either direction of rotation. This is an inherent and permanent characteristic of S.S.White remote control shafts — engineered and built into them by exclusive design features and winding process and special winding equipment.

You can't see this difference between S.S.White shafts and others, but you can readily feel it by making the "loop test" illustrated. Just take an S.S.White remote control shaft, make a loop as shown and with the loop on desk or table, rotate it with the fingers in one direction and then in the other. Note how very easily and smoothly it turns — either way.

This test, and subsequent use, has convinced many users — there is no "or equal" for S.S.White flexible shafts.

MORE FLEXIBLE SHAFT FACTS FOR YOU

BULLETIN 4501 **gives the basic information and data about flexible shafts and their application. Write for a copy — and ask for extras for your engineers.**

S.S.WHITE INDUSTRIAL DIVISION
THE S. S. WHITE DENTAL MFG. CO. DEPT. P, 10 EAST 40th ST., NEW YORK 16, N. Y.
FLEXIBLE SHAFTS • FLEXIBLE SHAFT TOOLS • AIRCRAFT ACCESSORIES
SMALL CUTTING AND GRINDING TOOLS • SPECIAL FORMULA RUBBERS
MOLDED SERVICES • PLASTIC SPECIALTIES • COMPACT PLASTICS MOLDING

One of America's AAAA Industrial Enterprises

New York, N. Y.—National Starch Products, Inc. William A. Foll and Irving Fisher have joined the sales staff of the company and its National Adhesives division.

New York, N. Y.—Allegheny Ludlum Steel Corp. C. M. Binney has been named assistant district manager of the New York sales district.

Bridgeport, Conn.—Bright Light Reflector Company. Theodore O. Jorgensen has joined the New York sales office of the

Theodore O. Jorgensen

company. He was formerly manager of the lighting division of the Consolidated Edison Co. of New York, Inc.

INDUSTRIAL DEVELOPMENTS

Adirondack Foundries & Steel, Inc. has purchased a surplus iron and steel foundry at Watervliet, N. Y., from the War Assets Administration. The corporation plans to use the foundry to increase its production from 100 tons to about 300 tons of steel castings per month.

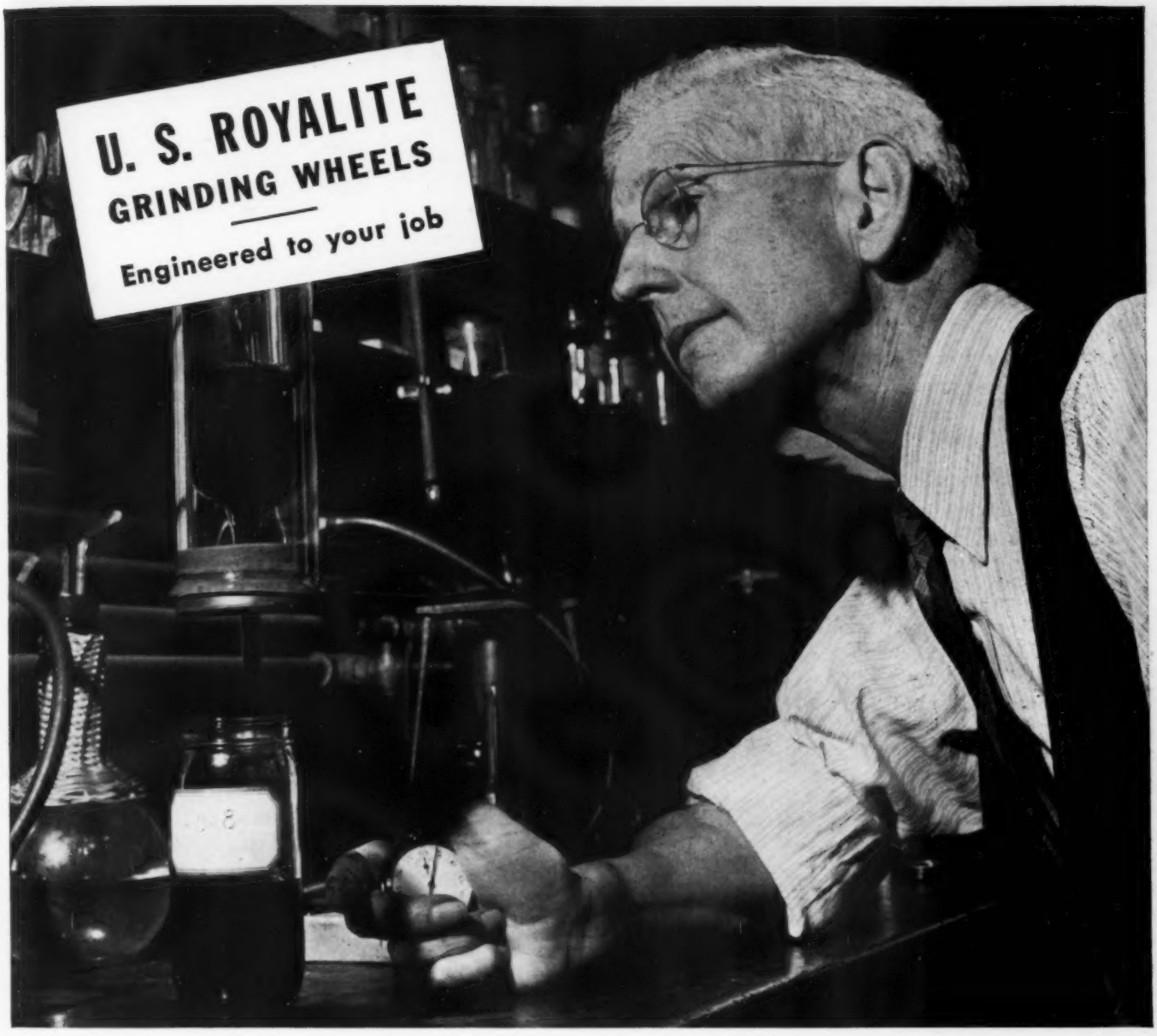
Joseph T. Ryerson & Son, Inc., steel distributors, have completed the construction of a new steel service plant in Emeryville, Calif., in the San Francisco Bay area. The plant is expected to be ready for business shortly. Ray C. Page is sales manager.

Federal Products Corporation, Providence, R. I., has purchased all rights and physical equipment for the manufacture of the electronic automatic sorting gages formerly designed and manufactured by Foote, Pierson & Co., Inc., Newark, N. J.

General Electric Co. has begun shipments from its plastics molding plant in Decatur, Ill. The company states that about a third of the approximately 130 hydraulic presses scheduled to be placed in operation have already been installed.

National Electric Products Corp., Pittsburgh, Pa., has purchased the Torrance, Calif. plant of Joshua Hendy Iron Works. The plant gives the company 131,000 square feet of floor space for the manufacture of flexible electrical conduit, tubing and electrical fittings.

(*Please turn to page* 294)



An old timer talks about Grinding Wheels...

You're looking at a test of the kinetic viscosity of liquid resin—one of many tests made to be sure you get a grinding wheel that is just what you've asked for . . . and more.

The purpose is always the same—*more production at lower cost*. We draw from our immense research facilities in every conceivable phase of abrasives and bonds. In addition, we have at our disposal the vast research data covered by the thousands of other products made by United States Rubber Company.

That is why we can deliver U. S. Royalite Grinding Wheels that are precisely engineered to your job, whether you're snagging castings, grinding ball races or working with billets, bits, slabs or sauce-pans. We can give you accurate grinding wheel costs in advance—by means of thorough field tests made by our engineers right in your own plant.

For more information, write United States Rubber Company, Grinding Wheel Dept., Fort Wayne 4, Indiana.

U. S. GRINDING WHEELS—ORIGINATED IN 1863

PRODUCTS OF

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

A practical "how to" book for everyone concerned with

INDUSTRIAL PURCHASING

With Hints on Working with Purchasing Agents

By EDWIN LAIRD CADY
Industrial Management Consultant

Actual examples from varied types of industry are used in *Industrial Purchasing* to explain the nature of the purchasing agent's job and its place in the industrial set-up. The many aspects of the purchasing agent's job are described so that the book gives a broad over-all picture of the purchasing function and its importance in the cooperative world of industry today.

•

Contents include: The Nature of the Purchasing Agent's Job; The Purchasing Agent's Time Schedule; The Art of Interview and Conference; Buying for Company Personnel; Customers of the Company; How to Understand a Factory; What to Get Out of Trade Papers; What to Get Out of Direct Mail and Sales Literature; Sources of Purchasing Information; Forecasting Ultimate Values; Records and Forms; Inventory Control; Central Purchasing; Mill Supply Houses; Purchasing Department Personnel; Finding the Qualities of Materials; Helping Salesmen to Give their Best; The Industrial Community.

1945
256 Pages
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Please send me, on ten days' approval, a copy of Cady's INDUSTRIAL PURCHASING. If I decide to keep the book I will remit price plus postage; otherwise I will return the book postpaid.
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Address .....
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(Offer not valid outside U.S.) P-4-48

The Timken Roller Bearing Company has leased 50,000 square feet of manufacturing space in Zanesville, O. in which to consolidate all Zanesville operations of the company.

The Lamp Department of the General Electric Co. has begun building a glass tubing factory in Logan, O., to help meet demands for fluorescent lamps.

The Stoker Division of the Link-Belt Company, has been acquired by the Timken-Detroit Axle Company, to round out its established line of heating equipment.

Towmotor Corporation has opened a fully-equipped service shop devoted exclusively to the maintenance and repair of fork lift trucks, industrial tractors and fork truck

Towmotor's New York Service Shop

accessories, at 111-113 LeRoy Street, New York, N. Y. The shop will provide complete maintenance and major overhaul service, with factory-trained personnel supervising all operations.

Melex Products (Canada) Ltd., allied with Melflex Products Co., Inc., of Akron, O. has been organized in Fort William, Ontario. The company manufactures products for underfoot safety.

Small Lot Stamping Co. has been established at 1025 W. Blancke St., Linden, N. J. The company will produce custom-made stampings from steel, brass, copper, aluminum, bronze, and associated materials in small lots.

Flexible Tubing Corporation, organized late in 1947, has announced its entry into the flexible tubing field. Laboratory, design engineering and manufacturing facilities are centered in Branford, Conn.

U. S. Electrical Motors, Inc., has begun a major expansion program in Milford, Conn., where the company's Atlantic plant is now being more than doubled in size.

Wheelock Manufacturing Co., St. Johnsbury, Vt., has been purchased by Chicago Metal Hose Corporation and is being operated as the Wheelock Manufacturing Division.

The Phosphor Bronze Corporation, Philadelphia, Pa., has purchased the assets of The Phosphor Bronze Smelting Company.

Norge-Heat Division, Borg-Warner Corp., has expanded its manufacturing and shipping facilities with the acquisition of a 150,000 square-foot plant in Hammond, Ind.

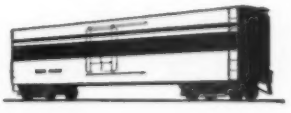
(*Please turn to page 295*)

All in one package!

You must have thought often of the mighty important role shipping plays in your business and private life, for you depend on shipping for practically everything you eat, wear or otherwise use . . .

We of Railway Express know how diverse shipping requirements can be. With the addition of hundreds of new express cars, motor vehicles and other equipment, we are building our service to meet every one of your transportation needs.

Such improvements, as well as rising maintenance and operating costs, have made higher charges inevitable—but these charges will aid us in making Railway Express the *high standard* shipping service for you and for all America.



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NATION-WIDE RAIL-AIR SERVICE

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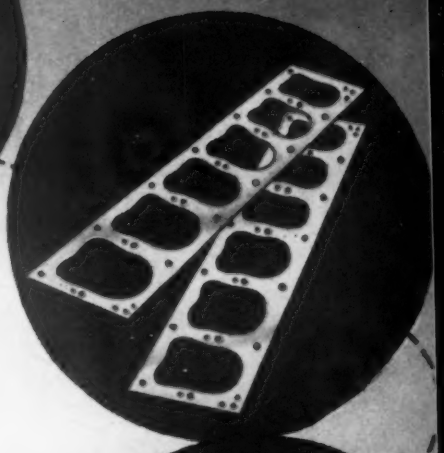
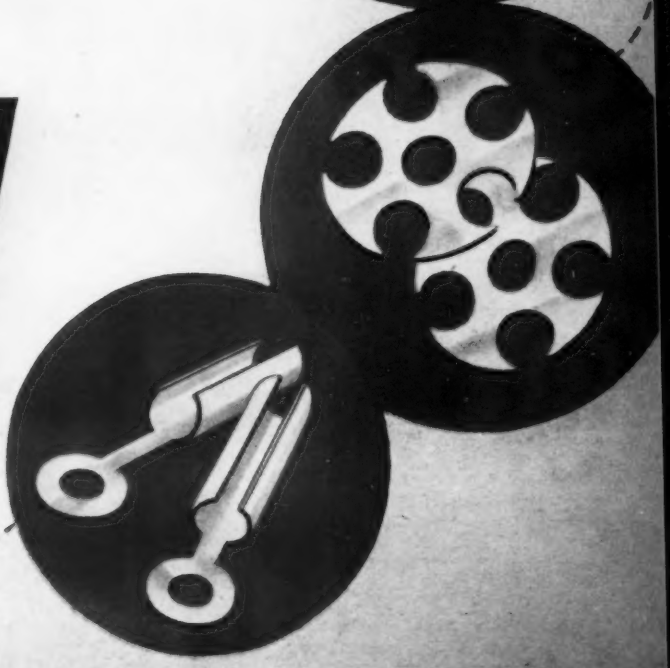
ELECTROLYTIC ZINC-COATED SHEETS AND STRIP





Reduces Die Cost

BY LENGTHENING DIE LIFE

Weirzin has a tight electrolytic zinc coating that lubricates dies without danger of leaving a zinc deposit. Die maintenance expense is thereby sharply reduced, and the life of the die increased.

A specific example of this, reported by a fabricator, relates that instead of the usual production run of 100,000 pieces from dies when using ordinary carbon steel, change to Weirzin increased production to over 400,000 pieces. This 300% average increase in production per set of dies is too great a factor in present-day costs to be ignored. You might find such an opportunity in your own plant.

The most severe fabricating operations will not cause Weirzin to peel, flake or powder. Its electrolytic zinc coating remains intact under deep drawing or difficult forming and bending operations without deterioration. For more specific information, write

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NATIONAL STEEL

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WEIRTON, W. VA. • *Sales Offices in Principal Cities*

Division of NATIONAL STEEL CORPORATION • *Executive Offices, Pittsburgh, Pa.*

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THE EXACT WEIGHT SCALE CO. COLUMBUS O.
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MODEL
TRIMALAWN
SERIAL NO.
LAWN MOWER DIVISION
REO MOTORS, INC.
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SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

The Tri-Line Corporation has been formed with main offices at 170 Franklin St., Buffalo, N. Y. The new firm takes over the distribution and field engineering on resistance welding equipment produced by Progressive Welder Co., Detroit, and the air and hydraulic equipment formerly handled by Industrial Equipment Co.

Zallea Brothers is the new name of the firm formerly known as Zallea Brothers and Johnson. The company, the address of which remains Taylor and Locust Streets, Wilmington 99, Del., makes expansion joints and flexible connectors.

Hewitt-Robins, Inc. has leased a warehouse at 1010 Pennsylvania Avenue, Charleston, W. Va., to stock conveying machinery and parts.

Technical Devices Corporation, Roseland, N. J., has been purchased by John D. Cassidy, formerly general manager of Universal Camera Corp.

Tobe Deutschmann Corporation has moved to a new plant on Providence Highway, Norwood, Mass., where capacitor facilities have been greatly expanded.

Maas & Waldstein Company, Newark, N. J., manufacturers of specialized production finishes, has announced that its Pacific Coast division, formerly known as the Smith-Davis Paint Co., has changed its name to the Smith-Davis Co.

B. F. Goodrich Chemical Co., Cleveland, O., has announced plans to construct a new $3,000,000 general chemical plant in Avon Lake, O.

Whitney-Hanson Industries, Inc. is the name of the new firm brought about by the merger of the Hanson-Whitney Machine Co. and the Whitney Chain & Mfg. Co. The two firms, both in Hartford, Conn., will operate as separate divisions of the new corporation.

STANDARD TUBE COMPANY OPENS NEW PLANT

The Standard Tube Company, manufacturers of welded tubing and fabricated parts, Detroit, Mich., recently opened its new plant at 24,400 Plymouth Road, in that city. Ground for the new plant which among other improvements features five ten-ton overhead cranes and a new electrical installation to furnish power to eight electric resistance welders and auxiliary equipment, was broken on July 9, 1947, and equipment began moving into the new plant in December.

AMPCO METAL MAKES NEW SALES APPOINTMENTS

Ampco Metal, Inc., Milwaukee, Wis., has announced the following changes in its sales organization:

Jack K. Bybee has been appointed district manager of the Detroit sales territory, assisted by Done Coleman, field engineer

(*Please turn to page* 298)

DO YOU KNOW?

By Using BEMIS TITE-FIT TUBING

YOU

REDUCE labor and material costs, because you:

ELIMINATE handling heavy bales of burlap.

ELIMINATE time required to open bales and remove bale coverings.

ELIMINATE time required to cut burlap into sheets.

ELIMINATE using more burlap than necessary.

ELIMINATE all hand sewing.

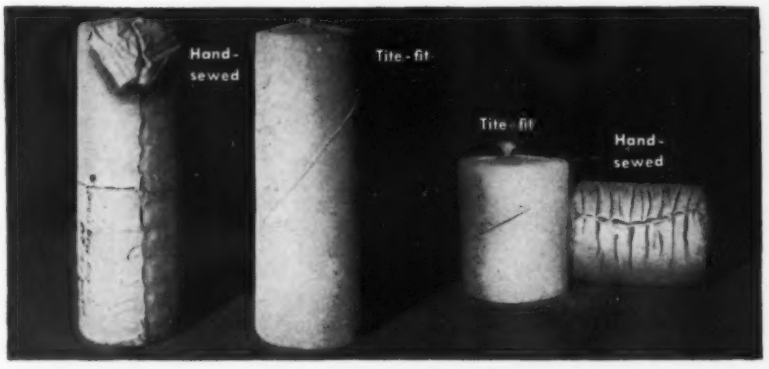
IMPROVE the appearance of your rolls.

YOUR CUSTOMERS

RECEIVE neat packages that are easy to handle, because there's a handy ear on each end.

SAVE TIME as TITE-FIT TUBING is easily and quickly removed. Just untwist wire tie at one end and slip tubing off.

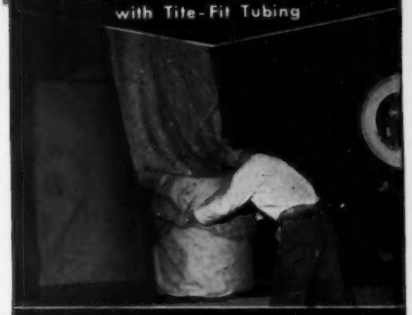
ELIMINATE chance of cutting into contents and damaging goods, as no cutting of sewing thread or goods is necessary.



This versatile tubing fits almost any shape and a wide range of package sizes. One roll may cover many different diameters and lengths neatly, without waste because TITE-FIT TUBING has *stretch* in both directions.

5 QUICK STEPS

That's all . . . when you package with Tite-Fit Tubing



1. Pull tube well down over object, leaving an overage to cover bottom.

2. Turn package on side and fasten tube at bottom with a wire tie.

3. Turn package upright and use both hands to take up slack.

4. Fasten top with a wire tie close to object to assure tight fit.

5. Cut off the Tite-Fit Tubing about 3 inches above the wire tie.

BEMIS BRO. BAG CO.

Brooklyn 32, New York

Canadian Bag Co., Montreal, and the Ontario Bag Co., Port Colborne, Ontario, are licensed manufacturers of TITE-FIT TUBING in Canada.

MAIL COUPON NOW

Bemis Bro. Bag Co.
5132 Second Ave., Brooklyn, N. Y.

☐ Send descriptive folder on TITE-FIT TUBING

☐ Send sample. Our packages are approximately _____ inches in circumference. (Please specify)

Name _____

Firm _____

Street _____

City _____ *Zone* _____ *State* _____

RUGGED APRONS

FOR *Maximum* WEAR

- Immediately available to you
- "Tailored" for your needs
- Designed for Worker Protection
- Built for Hard Work
- Priced right

Every Sawyer apron is made from the best raw materials obtainable. Expert workmanship and design assures you that a Sawyer apron really protects the worker and gives maximum wear.

When you buy a FROG Brand (Oiled) apron, you are sure of buying one of the best industrial aprons manufactured.

STYLE K-76
36" Wide
48" Long
Heavy Duck
Yellow Only

STYLE G-58
33" Wide
45" Long
Reversible
Yellow Only

THE H. M. SAWYER & SON CO.
28 Thorndike St. East Cambridge 41, Mass.

PACKAGING IS A BROAD CLASSIFICATION

If your approach to it is along scientific lines, you will wish to contact and use the service of our Creative Design Dept.

Information on the right type of package, its advantages in design—in construction—in low costs—in permanency, etc., will be quickly furnished for your consideration.

The Cleveland Container Company, with over twenty years of experience in this field, merits your inquiries . . . gives quick and intelligent service in furnishing the data you desire.

Besides the Packaging products mentioned below, we manufacture Cosmalite Tubes for Television Deflection Yokes and other Cosmalite products for use in the Electronic field.

Quality Products . . . rightly priced . . . rapidly produced. May we serve you?

The CLEVELAND CONTAINER Co.
6201 BARBERTON AVE. CLEVELAND 2, OHIO
- All-Fibre Cans • Combination Metal and Paper Cans
- Spirally Wound Tubes and Cores for all Purposes
- Plastic and Combination Paper and Plastic Items

★ ★ ★

PRODUCTION PLANTS also at Plymouth, Wisc., Ogdensburg, N.Y., Chicago, Ill., Detroit, Mich., Jamesburg, N.J.
PLASTICS DIVISION at Plymouth, Wisc. • ABRASIVE DIVISION at Cleveland, Ohio
SALES OFFICES: Room 5632, Grand Central Term. Bldg., New York 17, N.Y., also 647 Main St., Hartford, Conn.
CANADIAN PLANT: The Cleveland Container Canada, Ltd., Prescott, Ontario

(*Continued from page 296*)

Industrial Instrument Co., Millbury, O. has been appointed distributor in the Toledo, O., area; Gordon E. Brown has been appointed district manager for the Chicago sales territory, assisted by Robert H. Louthain, field engineer; Tom Coghill has been named Development Engineer-Process Industries with headquarters in the Chicago office.

★ ★ ★

SARGENT PURCHASES THE WM. SCHOLLHORN CO.

Sargent and Company of New Haven, Conn., announce the purchase of the operating assets of The Wm. Schollhorn Company, also of that city. The sale involved the purchase of the Schollhorn trade marks and patents and the rights to continue the manufacture of the Schollhorn and Bernard pliers and various special tools. It involved the purchase of the machinery and other assets but not the Schollhorn factory building which will, however, continue to be occupied by Sargent and Company. Sargent & Company is one of the larger manufacturers of builders hardware and allied products.

Seated: President Forbes Sargent of Sargent and Co., and President Morrell MacKenzie of the Schollhorn Co., sign the purchase agreement.

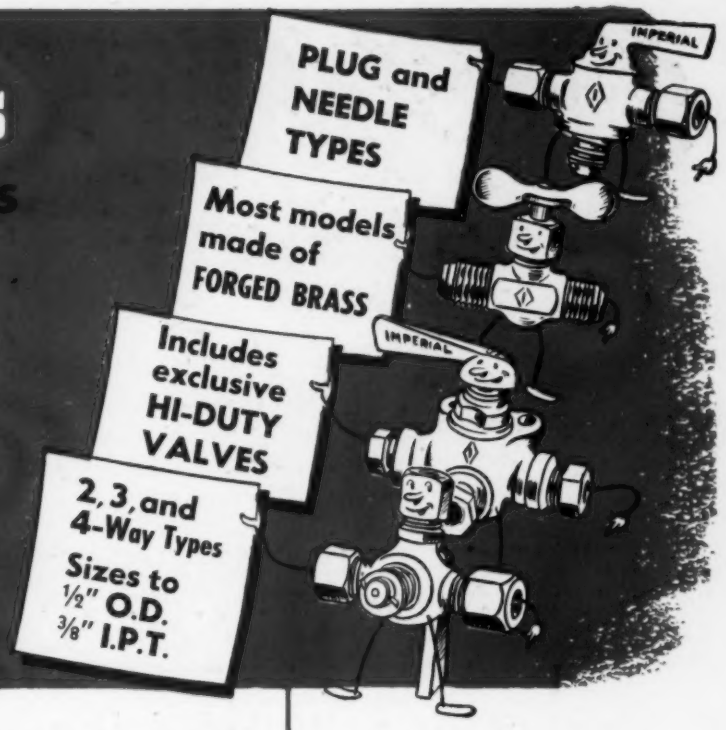
★ ★ ★

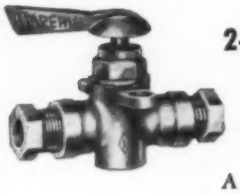
PEAK GETS NEW APPOINTMENT AT OLD DOMINION BOX CO.

Malcolm A. Peak, who has been associated with Old Dominion Box Co., Inc., Charlotte, N. C., for 27 years, has been named manager of the Standard Line Division of the company. Since 1920, when he started as a shipping clerk at Old Dominion, Mr. Peak has served as production superintendent, purchasing agent and sales manager of various divisions.

Malcolm A. Peak

IMPERIAL'S Complete Line Aids You in Selecting SHUT-OFF VALVES for Low and Medium Pressure Work



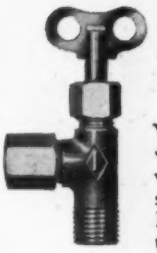


2-WAY HI-DUTY SHUT-OFF VALVES

An extra sturdy valve for better performance on your products and in your plant. For liquids, gases, low and medium pressure. Assures real protection against leakage. Has solid bottom.

3-WAY and 4-WAY HI-DUTY SHUT-OFF VALVES

Outstanding valves for a wide range of industrial applications. Used as shut-off and distributing valves for liquids, gases. Also on fuel lines, on power units, trucks, airplanes, etc. Has nickel silver plug, packed stem.

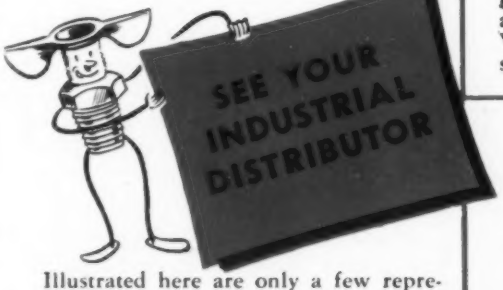


SHUT-OFF NEEDLE VALVES

Very popular low cost valves available in a wide range of sizes, styles and connections. Less costly than other types of shut-off valves, yet eliminate leaking. Also Saddle Valves.

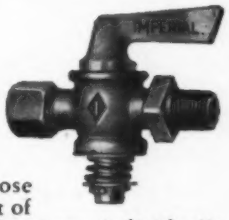
FUEL AND AIR VALVES

Designed to comply with Underwriters' Laboratories specifications regarding stuffing box, packing gland, etc. Bronze body.



Illustrated here are only a few representative types of Imperial Valves. The complete line is described in Catalog No. 350. Ask for your copy.

2-WAY SHUT-OFF VALVES



General purpose valves for a host of applications. Plugs are individually ground into a perfect seat. Will open and close at a quarter turn of handle. Wide range of tubing and pipe thread sizes.

3-WAY SHUT-OFF VALVES

Used on liquid and air lines in industrial plants. Also ideal for use on trucks, buses, tractors, etc., wherever two fuel tanks are used and wherever two different fuels are used.

DRAIN COCKS *(Needle Type)*

Available in 3 styles — sizes to ½" I.P.T. Models with extension for rubber hose. Seats finely finished to assure tight shut-off. Very dependable.

DRAIN COCKS *(Plug Type)*

3 styles. Plugs are individually ground to each body assuring a perfect seat and smooth operation. Positive in action.

THE IMPERIAL BRASS MANUFACTURING CO., 521 South Racine Avenue, Chicago 7, Ill.

IMPERIAL

TUBE FITTINGS • SHUT-OFF VALVES
DRAIN COCKS • TUBE WORKING TOOLS
AIR NOZZLES • WELDING EQUIPMENT

Years of shelter

built in a day

It takes only a few hours to erect a Standard ARMCO STEELOX Building, and you have a strong, sturdy structure that will last for years and years.

The unique STEELOX joint does the trick. Individual panels go into place like magic to provide both structural support and finished surface. For sidewalls they save framing and outside covering. On the roof they replace rafters, sheathing and roofing. Erection is simplified, costs go down, and weathertight construction is assured.

But these are only a few of the advantages. With all their strength, STEELOX Panels are light and easy to handle. One or more unskilled workmen quickly make a strong, tight, fire-resistant structure that combines all the advantages of a permanent building with high salvage value. STEELOX Buildings can be quickly dismounted and re-assembled on another site.

You can get prompt delivery on Standard ARMCO STEELOX Buildings for utility buildings, garages, offices, warehouses or wherever else you need an easily-erected, permanent or temporary structure. Mail the coupon for prices and complete information. ARMCO Drainage & Metal Products, Inc., 2405 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation

ARMCO STEELOX BUILDINGS

ARMCO DRAINAGE & METAL PRODUCTS, INC.
2405 Curtis Street Middletown, Ohio

Send me data on Standard ARMCO STEELOX Buildings for the following use_____

_____

_____

Name_____

Street_____

City_____ State_____

ABRASIVE BELT MOVIE ANNOUNCED BY PORTER-CABLE

"A Machine of the Age" is the title of moving picture film on abrasive belt machining, announced by the Porter-Cable Machine Co., 1714 North Salina Street, Syracuse 8, N.Y. Many of the sequences in the new film, showing the abrasive belt machining method in action, were filmed during working hours and under actual working condition in different shops throughout the country. These "on the spot" case histories demonstrate the high production rates possible on surfacing, stock removal and grinding operations when the abrasive belt machining method is employed.

The film describes the various kinds of ferrous, non-ferrous metals, glass, plastics, wood and other products which can be machined by the belt method. Among operations featured in the picture are,—removing risers, flashings and parting lines from castings, surfacing large, flat areas to close tolerances, chamfering, edging, squaring, rounding and cutting radii on single operations.

The film is black and white; 16 mm; sound; running time 30 minutes. It is obtainable free of charge.

SPECIFICATION FOR DRY CELLS AND BATTERIES

The fifth edition of the American Standard Specification for Dry Cells and Batteries, approved by the American Standards Association on August 6, 1947, is now available as Circular C466 of the National Bureau of Standards. The new specification, to be known as American Standard C18-1947, covers the first-grade product of manufacturers and includes all the types of batteries commonly used by the public. Its technical requirements have also been incorporated into a revision of Federal Specification W-B-101.

Publication of the 1947 edition of the standard marks another step in a project begun during the first World War and continued since that time with the cooperation of manufacturers and large industrial users of dry cells. This work has been accomplished through a sectional committee of the American Standards Association under the sponsorship of the National Bureau of Standards.

Advances in the dry-cell industry since the last previous specification of this type was issued in 1941 are incorporated in the fifth edition. For example, the small sizes of dry cells, including flat or miniature cells, receive more emphasis. Also included are specifications for radio battery packs combining low voltage for the A circuit and a higher voltage battery for the B circuit, a more complete standardization for hearing aid batteries ,and standardized socket connections for radio A, B, and C batteries. In addition, there have been increases in the requirements of some of the old, established tests.

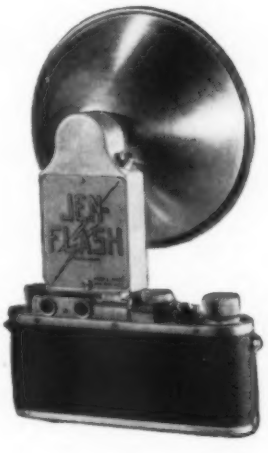
Circular 466 may be obtained at a cost of 10 cents from the Superintendent of Documents, Washington 25, D. C., or from the American Standards Association, 70 East 45th Street, New York, N. Y.

(*Please turn to page* 316)

COMMON SENSE ASSEMBLY ENGINEERING... LIGHTS UP WASTE IN TAPPING ...DEVELOPS A 50% SAVING

The polished reflector is fastened to the cast aluminum case of the synchronizer with three Binding Head P-K Type "F" Self-tapping Screws. One operation completes the fastening—simply driving the screw in plain, untapped holes. Type "F" cuts its own threads... can be removed and reinserted without impairing security.

The battery springs are fastened to the case with two Binding Head P-K Type "Z" Self-tapping Screws. Holes for these screws are drilled at a 12½ degree angle. When machine screws were used, tapping was difficult, and the fastening frequently loosened. One P-K Type "U" Screw is used for fastening the insulating sheet to the case.



WHEN JEN PRODUCTS CO. started assembly of their handy JEN-FLASH synchronizers with machine screws, they soon found fastening costs running too high. By changing over to P-K Self-tapping Screws, they achieved an assembly saving of 50%, and greatly improved product strength.

With direct costs of assembly the highest ever, now is a good time to *question every fastening* in your operations. Find out if you are missing the obvious savings of the P-K "short-cut" method. In 7 out of 10 assemblies studied, P-K Screws permitted savings up to 50% by eliminating tapping, nut-running, riveting, and other needless operations.

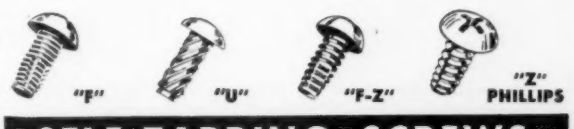
Ask a P-K Engineer to tell you how you can apply these advantages, or, mail assembly details for recommendations. Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

Sold Only Through Accredited Distributors

PARKER-KALON

P-K*

*Reg. U.S. Pat. Off.



SELF-TAPPING SCREWS

OTHER PARKER-KALON PRODUCTS COLD-FORGED SOCKET SCREWS • HARDENED SCREWNAILS AND MASONRY NAILS • SHUR-GRIP FILE AND SOLDER IRON HANDLES • METAL PUNCHES • DAMPER REGULATORS AND ACCESSORIES

Even a heartbeat can be heard in this amazing room!

ESPECIALLY constructed with a spring-supported wire mesh floor, this room in the Bell Telephone Laboratories in Murray Hill, New Jersey, is being used to aid in the study of sound and the instruments that transmit it.

It may well be the quietest spot in the world. For not only is outside sound prevented from entering the room, but 99.98% of all incident sound in the room is absorbed by the specially constructed, sound-trapping, saw-toothed wedges of glass wool which line the walls, ceiling and sub-floor to a depth of five feet.

The floor, unlike any other ever constructed, consists of cable only eight-hundredths of an inch in diameter which has been woven into 2″ mesh. It will support a load of 5 pounds per square inch. The cables are so small that they do not reflect sound waves but permit them to go right through the floor to the sub-floor where the bottom wedges are located.

Springs play an important role in the functional efficiency of the room. For they support the floor by maintaining uniform tension of the cables. Working with Bell engineers, American Steel & Wire Company furnished extension type springs for a scale experimental model to prove the practicability of this type of floor construction. Because of their success in the scale model, U·S·S American Quality Springs were furnished for the full-sized room.

Furnishing springs for specialized applications has long been a speciality of ours. We invite you to consult with us on any troublesome spring problem you might have.

AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY
San Francisco

Tennessee Coal, Iron & Railroad Company, Birmingham, Southern Distributors
United States Steel Export Company, New York

UNITED STATES STEEL

AMERICAN STEEL & WIRE COMPANY
USS
AMERICAN SPRINGS
UNITED STATES STEEL

● These U·S·S American Quality Springs support the floor in the soundproof room of the Bell Telephone Laboratories in Murray Hill, New Jersey, by maintaining uniform cable tension.

WHEN YOU NEED WIRE...

AMERICAN STEEL & WIRE COMPANY · USS AMERICAN MANUFACTURERS WIRE · UNITED STATES STEEL

In our modern plants with the latest kind of equipment, we can manufacture thousands of different types of wire; wire that includes Stainless Steel, Oil Tempered, Music Spring, and Heading Wire, is produced free of imperfections and drawn to your most exacting specifications. Our unexcelled research, testing, and production facilities plus over a century of wire-making "know how" are at your service.

WHEN YOU NEED COLD ROLLED STRIP...

We are the world's largest manufacturer of cold rolled strip. We produce carbon, stainless, and alloy steel strip in all commercial bright finishes with carbon strip either galvanized, coppered, tinned, or special finish. Tempered steels are made in black, scaleless, polished, and polished-and-colored finishes. At present, the demand for our high quality strip steel far exceeds the supply, but we are doing our utmost to fulfill our customers' needs.

AMERICAN STEEL & WIRE COMPANY · USS AMERSTRIP COLD ROLLED STRIP · UNITED STATES STEEL

OIL-FILLED BENCH STONES...

...DELIVER *EXTRA*
SHARPENING SERVICE
at the PRICE OF DRY STONES

Oil filling is a built-in extra service feature of Crystolon Bench Stones — at the price of regular dry stones. And this is important, because bench stones are supposed to be used with oil. Oil makes them cut faster and cooler and produces a better cutting edge. Oil also helps them resist glazing or filling.

But oil filling is a messy job at best — and it has to be done right. The oil must penetrate the pores of the entire stone. And, unless the right kind of oil is used, the surface of the stone will gum.

Crystolon Bench Stones are made of genuine Norton silicon carbide abrasive, vitrified bonded and oil-filled at the factory for your convenience and for better sharpening. Ask your Distributor to furnish oil-filled Crystolon* Bench Stones for extra service at no extra cost.

** For oil-filled aluminum oxide bench stones, specify "India."*

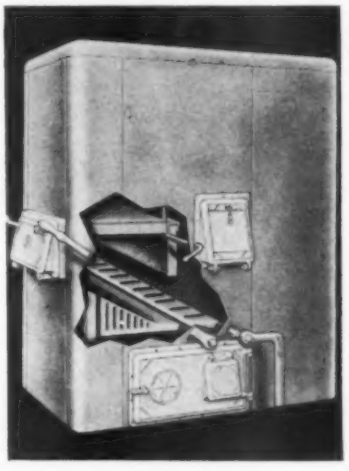
BEHR-MANNING
(Division of Norton Company)
TROY, N. Y.

TREATED CLOTH PREVENTS FOG ON WINDOWS, GOGGLES

Announcement is made by E. I. du Pont de Nemours & Co., Wilmington, Del., of the marketing of a chemically impregnated soft, absorbent cotton cloth which with one wiping keeps "fog" from forming on the inside of car windows or on eye-glasses when the wearer steps indors. Tests with safety goggles have shown that one wiping with the cloth will keep glass clear for hours. The cloth is soaked with an anti-fogging agent and then dried. The agent is a solution of what is termed a synthetic detergent, tannic acid, glycerine, water and dye. The treated cloth may be used indefinitely.

SMOKELESS FURNACE

Illustration shows smokeless coal burning furnace, product of Worsham Company, Inc., 7329 Lohmeyer Avenue, St. Louis 17, Mo. This new line of furnaces and stoves is known as the Worsham Minute Smokeless Furnaces and Stoves, and they are claimed to eliminate frequent furnace tending, shaking of grates, pulling clinkers, cleaning of fires, scooping of ashes and smokey atmosphere.



The smokeless heater converts coal into gas and coke.

These new heaters are semi-automatic. A full day's or night's supply of oil-treated dustless coal is placed directly in the furnace by hand. No further attention need be given the furnace all day or night. Its burning pace is controlled through draft dampers automatically operated by a remote thermostat. But three operations are required when tending the furnace, namely: The movement of one lever dumps the ashes into an ash container; the movement of another lever transfers the remaining incandescent coke; coal is then poured in the furnace. Any kind or size of coal can be used up to the size of one's fist.

In effect this new type of coal-burning heating plant turns soft high volatile coal into a coke by transforming the coal into gas and burning it as it comes from the coal; then the remaining coke continues to heat for several hours. In other words, two of the finest fuels are created and burned separately, and made as used, from the raw material coal. Printed matter is available.

(*Please turn to page* 308)

Can Your Skeleton Use Tubular Bones?

Courtesy Cliffside Body Corporation

The "bones" in this skeleton are square steel tubes, welded together to make a stiff, rigid frame. The idea, used here to form a truck body, is easily adapted – you may find it profitable.

In this instance, the tubular construction, developed with the help of Frasse specialists, replaced a complicated system of bolted channels, gussets, cross fittings, angles and similar parts. Result? A stronger, more rigid, squeakless body—25% lighter, with more capacity for pay load . . . faster, neater assembly . . . greater flexibility of design . . . and 3 items to inventory instead of 60.

While mechanical tubing is widely used "to save machining the hole", it is equally handy for structural use. It pays—in product improvement, lower production cost, *often in material cost,* to think of tubing in your product.

And when you think of tubing, think of Frasse. Frasse stocks mechanical tubing, pressure and condenser tubing, stainless tubing—even stainless pipe and fittings. All grades are maintained in broad, convenient size ranges, and Frasse engineering service is just as handy whenever you need it. Call us. *Peter A. Frasse and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • Jersey City • Syracuse • Hartford • Rochester • Baltimore*

Send for this FRASSE *Tubing Inventory*

This handy booklet lists each mechanical tube size immediately available from Frasse warehouse stocks – a useful reference and purchasing guide. Send the coupon for your copy today.

FRASSE *for Steel Tubing*

Seamless and Welded Mechanical Tubing

Condenser and Pressure Tubing • Aircraft Tubing

Stainless Seamless and Welded Tubing • Stainless Pipe and Fittings

PETER A. FRASSE AND CO., INC. 22A
17 Grand Street, New York 13, N. Y.

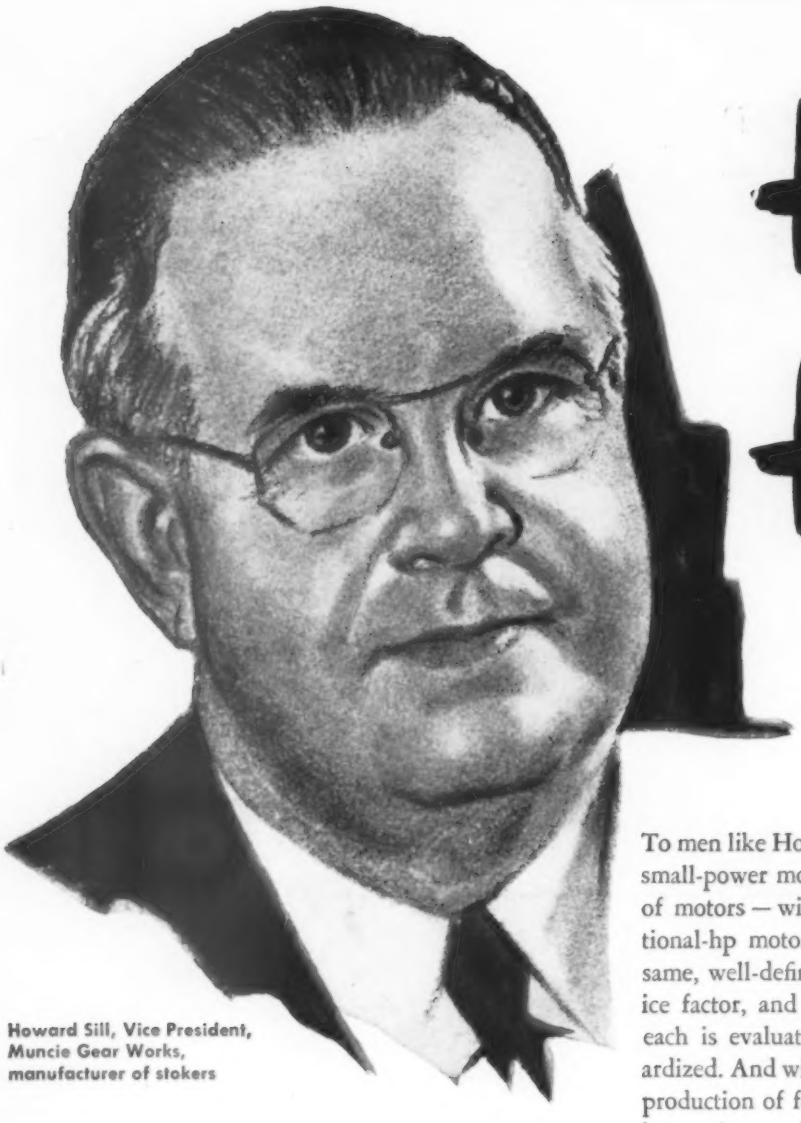
Please send me a copy of your latest Steel Tubing Inventory.

Name..... Title.....

Firm.....

Address.....

He buys
He uses



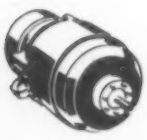
Howard Sill, Vice President,
Muncie Gear Works,
manufacturer of stokers

To men like Howard Sill, vice president of Muncie Gear Works, small-power motor standardization means increased availability of motors — wider interchangeability of make. For now, fractional-hp motors of different manufacturers are rated on the same, well-defined basis. Horsepower, breakdown torque, service factor, and starting current each has a specific definition; each is evaluated on a uniform basis. Dimensions are standardized. And with motor manufacturers concentrating on greater production of fewer models, purchasing agents will stand a far better chance of being able to buy motors "off the shelf".

More for your money with STANDARD GE Fractional-Horsepower MOTORS

DEFINITE-PURPOSE MOTORS, such as oil-burner motors, jet pump motors, hermetics, and the others shown below, as well as 11 types of general-purpose motors, are now being manufactured *in standard designs* by General Electric. Ratings, performance standards, dimensions, and special features follow the standards worked out by the National Electrical Manufacturers' Association in conjunction with your industry associations. You get all the advantages of standardization — and more than 1600 standard G-E motors to choose from. In addition, General Electric brings you motor-exchange and repair-service plans which, in speed, completeness of service, and economy, are not even approached by any other small-power motor manufacturer.

New Bulletin Describes Standards — To help you determine just how the new NEMA standards will affect your motor selection problems, we have prepared a brief but concise bulletin which tells what the standards are and how they are applied. Ask your local G-E office for Bulletin GES-3565 or write *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



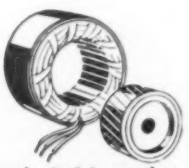
Unit-Bearing Fan

Washing Machine

Oil Burner

Machine Tool

Gas Pump

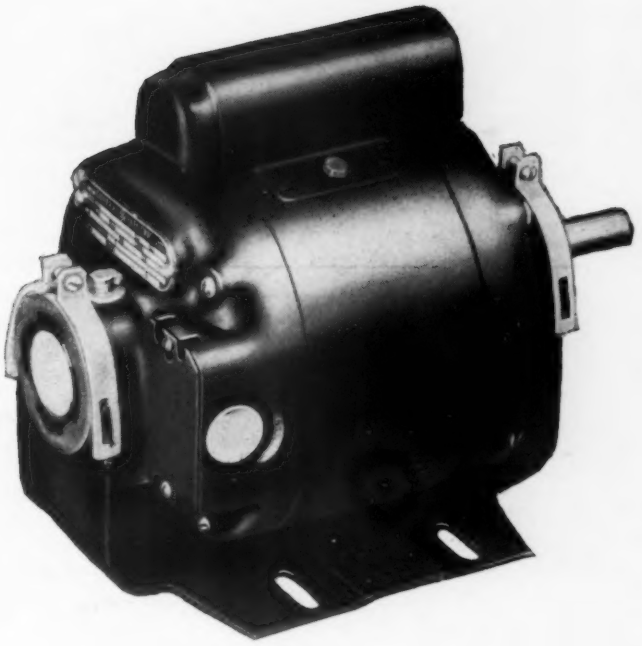


Hermetic Refrigeration

with less bother

STANDARD

COAL STOKER MOTORS



A highly successful example of small-motor standardization is the G-E coal stoker motor. Here's a *standard* fractional-hp motor built *specifically* for domestic coal stoker service — according to specifications worked out by NEMA. It incorporates these two features essential in stoker applications.

Totally-enclosed construction — (temp. rise 55°C.) to keep out harmful coal dust
Sleeve bearings — (steel backed and babbitt lined — for smooth, quiet operation)

In addition G-E coal stoker motors offer these important construction features for long trouble-free service:

Automatic Overload Protection — When overheated, motor is automatically disconnected from the line. After cooling, it is automatically reconnected and stoker operation continues.

Resilient Base Mounting – Strong steel base supports motor through resilient end rings around bearing housing. Shaft alignment is maintained — end-wise movement is restrained.

Large Oil Reservoirs — Only 30 to 70 drops of oil required at the end of the first year and an equal amount at the end of every 1000 hours of operation thereafter.

Motor Windings — Rotor windings are die-cast aluminum with permanent electrical characteristics. Formex* wire is used in main and starting windings. Coils are solidly bonded in place with insulating varnish.

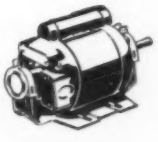
G-E coal stoker motors are now being manufactured in the following sizes and types: capacitor start—1/6, 1/4, 1/3, 1/2 and 3/4 hp; polyphase—1/2 and 3/4 hp; d-c—1/2 and 3/4 hp. Typical speed-torque characteristics are shown on a chart in Bulletin GEA-4710. For further information on coal stoker motors, call or write your nearest G-E field office.

*Reg. U. S. Pat. Off.

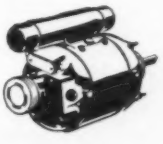
GENERAL ELECTRIC

700-89

Belted Fan


Coal Stoker

Jet Pump


Shaft-Mounted Fan

Sump Pump

General Purpose

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Have one piece reinforced base with casters or glides. Ton-tested for strength. Adjustable foot-rest furnished if desired.

Send for Chair or Stool to try 30 days or write for circular and full details.

C. G. Campbell, President

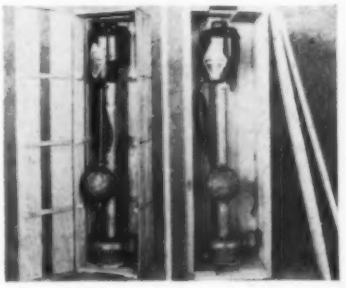
KEWAUNEE MFG. CO., 5006 S. Center St., Adrian, Michigan

SILICONE NOW USED AS GOLF BALL CENTER

Silicone "bouncing putty", the G-E laboratory curiosity which has been seeking a user for the past three years, is now being incorporated as the center of golf balls, according to announcement by the United States Rubber Company. Together with a new type of electronic winding, the silicone center is said to bring greater distance, and improved "click" and feel" to the ball. It is stated that the balls will be completely uniform as a result of the silicone center and the winding process. The silicone center will be incorporated in U. S. Royals, and in the True Blue and Three Star lines.

The application of the silicone bouncing putty to golf balls is the first large use of this particular type of silicone material, which is unusual in that it will rebound faster and to a greater height than a natural rubber ball. Left by itself, it will flatten out freely and evenly like a pancake.

A STUDY IN WEIGHT REDUCTION



At the left in a 6¼-lb. wirebound crate now used by Jacuzzi Bros. Inc., Richmond, Calif., to ship its 52-lb. sump pump to all parts of the country, and at the right is the 20-lb. container formerly used. The wirebound crate represents a tare weight saving of approximately 70%. It represents one pound of tare weight to over eight pounds of pay-load, while the container formerly used had a ratio of one pound of container to every 2.6 pounds of pump. The total shipping weight has been reduced from 72 to 58¼ pounds, or about 16 percent.

SYNTHETIC FUEL RESEARCH PROGRAM

In the course of raising the curtain on more than a decade of synthetic gasoline research, it was made known recently that a merger of the synthetic fuel program of Cities Service with that of the M. W. Kellogg Co., petroleum engineers, has been in effect since 1946, and that Kellogg is now prepared to license synthetic fuel plants on behalf of both companies.

Test runs in the companies' pilot plants have demonstrated an improved control of quantity and quality of product and extension of length of runs to give appreciably greater on-stream efficiency. As a result, the manufacture of synthetic fuel from natural gas is now considered commercially sound, it is said.

Initial research by the Cities Service or-

(*Please turn to page* 316)

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can profitably use one or more of these ROTARY IMPACT TOOLS

NO KICK
NO TWIST
EVEN ON THE TOUGHEST JOBS

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☐ Send Test Wheel for use on .....
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Name .....

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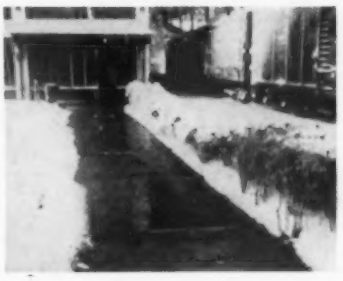
(*Continued from page* 308)

ganization in the production of chemicals from natural gas by means of direct oxidation was begun as far back as 1926. Since that time it has spent millions of dollars in this research and commercial work. The company is one of the largest producers of natural gas in the country, producing 154,000,000,000 cubic feet during 1947. Its reserves are described as tremendous and as representing an extremely important potential source of raw material for the production of synthetic fuels.

PIPE SYSTEM MELTS SNOW AS IT FALLS



No snow shovels or chemicals were needed to clear this sidewalk at the Beechnut Packing Company plant in Canajoharie, N. Y. Hot water lines of wrought iron pipe warm the pavement to melt snow as quickly as it falls. When this picture was taken, a heavy wet snow was falling and all areas, except the heated walks were finally covered by 22 inches of snow. Water in the system is circulated continuously and is heated by a heat exchanger connected to the plant's steam lines. It is claimed that the cost of operation is less than the cost of manually removirg snow and ice.

LAUNCH CAMPAIGN TO RELIEVE STEEL & SCRAP SHORTAGE

A campaign to relieve the critical shortage of steel and iron scrap has been launched by the Chicago Association of Commerce and Industry. A letter urging renewed collection efforts and offering a number of suggestions for increasing the supply of scrap metal has been sent to 5,000 member firms of the Association. The letter states that some open hearth furnaces have been closed by the shortage of scrap, and that the need will be the greatest during the next 90 days.

The Association recommends the scrapping of obsolete or unusable equipment, such as outmoded tools, dies, jigs, molds and parts; the dismantling of unused buildings, and the disposal of stocks of replacement parts no longer needed. The member firms are requested to write similar letters to their suppliers, dealers, branches, and customers.

Letters are also being sent by the Association to a number of Chicago business groups that produce large quantities of scrap metal, such as automobile repair shops, furnace repair shops, and motor truck operators.

(*Please turn to page* 312)

Chase can supply you
...WITH BRASS, COPPER, BRONZE PRODUCTS FROM STOCK!
WANT prompt delivery of brass and copper sheet, rod, wire, or tube? Or brass and bronze nuts and bolts, copper rivets and burs—a myriad of miscellaneous items? Try your local Chase warehouse.
There are 22 warehouses ready to serve you. Ready to fill your orders immediately, ready to place big orders directly with the mill for prompt delivery!
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BRASS & COPPER

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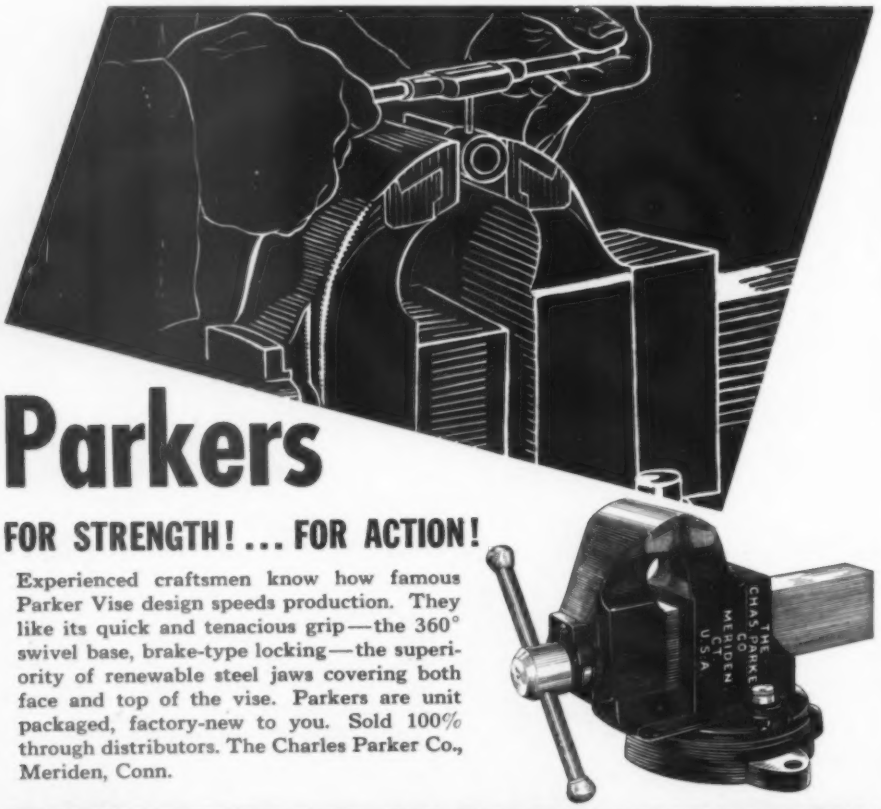

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PARKER VISES
America's First Vise Maker

NEW G-E PHENOLIC RESIN DESIGNED AS CORE BINDER

A new phenolic resin to bind sand cores used in the casting of metals has been developed by the General Electric Company's Chemical Department, Pittsfield, Mass. The material is uniform, flexible, and non-sticky, has good flowability and low moisture content.

General Electric stated that the new phenolic core binder imparts enough dry strength to the core materials to allow the core to be handled while still warm. With a minimum of baking time and temperature the G-E phenolic core binder is said to impart sufficient strength to the core to withstand pouring temperatures of 2750°F.

Designed to have a low hot strength and excellent green strength, the G-E phenolic core binder evolves very little gas during pouring and will not impair the properties of the core material after shake-out, the Company said. Available in concentrated form, the phenolic core binder is easy to mix and convenient to store.

BIG INCREASE IN BITUMINOUS COAL CONSUMPTION

Consumption of bituminous coal by American industry in 1947 was 12 per cent higher than in 1946, further evidence of the high industrial activity that prevailed throughout '47. Comparative figures on consumption issued by the Bituminous Coal Institute, Washington, revealed that the electric public utilities used 25 per cent more bituminous coal that in the previous year. The coke ovens, life-blood of steel manufacturing, used 24 per cent more bituminous coal than in 1946. The railroads, the coal industry's biggest single customer, used just about as much bituminous coal in 1947 as in 1946, despite the increasing number of oil burning diesel locomotives now in service. The railroad bituminous coal consumption figure was 110 million tons in 1946 and 109 million tops in 1947.

Deliveries to retail dealers in 1947, according to the Institute's tabulation, was about on a par with 1946, roundly 100 million tons.

"It is to be noted also," said Walter L. Slifer, chief of the Institute's statistical and research section, "that industrial stocks of bituminous coal plus stocks in retail yards as of December 31, 1947, were five million tons higher than as of the same date 12 months earlier."

Exports of bituminous coal to Canada in 1947 stepped up to 25 million tons compared with 21 million tons in 1946, and deliveries of bituminous coal to exporters for shipment overeas rose from 19 million net tons in 1946 to 43 million net tons in 1947.

The 12 per cent increase in total consumption of bituminous coal in 1947 contrasts with 16 per cent increase in total mine output. The mine output total, which on the basis of preliminary figures, amounted to 620 million tons was an all-time high record, topping by a slight margin the previous peak production reached in 1944.

(*Please turn to page* 314)

When the Order is for Portable Electric or Pneumatic Tools

Order SKIL Tools

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Take These Speedy
SKIL Grinders
right to the job for finer, faster finishing
Electric SKIL Grinders are lightweight, easy to carry anywhere . . . balanced right, easy to use everywhere . . . and they pack the punch that assures top grinding speed on thousands of jobs. And for long-run economy you can't beat their high-quality motors, bearings, gears, shafts, housings . . . everything that adds up to lower operating cost per year. See your SKIL Tool Distributor today for a demonstration!
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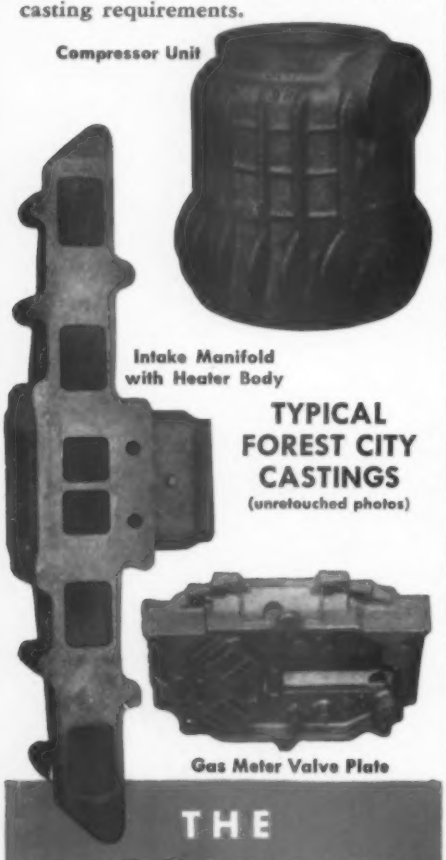
on 2 main line railroads

equipped for fast, efficient production to meet your casting requirements.

Special facilities for rollover and cope-and-drag production to 150 pounds. Other castings up to 1000 pounds.

Send us your inquiries or ask for a representative to call to discuss your casting requirements.



TYPICAL FOREST CITY CASTINGS
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Nuclear Energy For Industry In 10 To 20 Years

"It will be 10 to 20 years before atomic energy can compete favorably with coal as a source of industrial power," Dr. Lyle B. Borst, Chairman of the Nuclear Reactor Project at Brookhaven National Laboratory, Upton, Long Island, N. Y., told The American Society of Mechanical Engineers at a meeting in New Orleans. It may possibly become economically sound in European countries first, because of coal shortages abroad, he said.

"The industrial applications of atomic energy will be legion—but will certainly not be immediate," Dr. Borst declared. Many problems are to be solved in the meantime. But "the development of atomic power is one of the most direct and foreseeable future industries."

More immediate practical applications were seen for mobile use, as for ships, submarines and airplanes. Atomic powered automobiles were not deemed feasible—"we just don't know how to build a safe engine weighing less than 20 tons."

To Demonstrate Peacetime Power by '49

For the first time in history, the generation of power from the atom for peacetime use will be demonstrated at Brookhaven. This is expected within the next two years, Dr. Borst said. Since the nuclear reactor, of which he has charge of design, construction, and operation, is planned for research rather than for a power plant, the power generated will be a by-product. Contracts are being negotiated for a steam plant which derives its power from the nuclear pile. The steam will generate electricity which will be used for driving cooling fans and other apparatus.

Before nuclear energy can meet with widespread use for industrial power, many problems requiring time, ideas, manpower and money must be solved, the speaker said. About two and a half billion dollars have been spent so far, mostly through industrial contracts. There is already a "far flung, established and going industry.

"Because of the excellent coal resources in the United States, it is quite possible that atomic power will become economically sound in other countries before it can compete with other sources here," the scientist said.

Among current problems is that of operating reactors at sufficiently high heat for the conventional heat engine. Dr. Borst continued:

"We have looked long and hard for a trick method of getting electrical energy directly from the chain reaction. We would greatly enjoy building a chain reactor with two wires leading out to carry away the energy at a modest voltage of a million or so volts. There ought to be a way of using this energy directly. We can get some energy from a reactor directly—in fact we normally control it by this means. We can even dream up a system by which we can achieve a reasonable efficiency. The only trouble is that such a system will not support a chain reaction.

"So far we have learned no 'open sesame.' We acknowledge generally that electrical power, for the forseeable future, will be generated by means of the general heat engine.

"Even under the most optimistic circumstances, it is going to be difficult to compete on a straight cost basis with coal as a source of power," Dr. Borst said. He declared that he is "quite confident that our nuclear reactor will not put the Long Island Lighting Company out of business."

Atomic Power for Ships, Planes

Certain characteristics of atomic power plants will enable them to compete with other power sources in special uses, Dr. Borst states. As a mobile power source, it will be the first engine not dependent upon the earth's atmosphere, as are the steam and internal combustion engines which depend on oxidation of a fuel by air. This and the small weight of the fuel will make it suitable for submarines and ships and "even airplanes will refuel only at rare intervals."

Further, "the low cost of fuel transportation permits the use of atomic power plants to advantage in inaccessible places having no local power sources. It should be possible to irrigate and place under cultivation desert areas which are now useless."

Other industrial applications of reactors may avoid the generation of electrical power. Reactors as heat sources may be used for instance in metallurgical industries which require high temperatures.

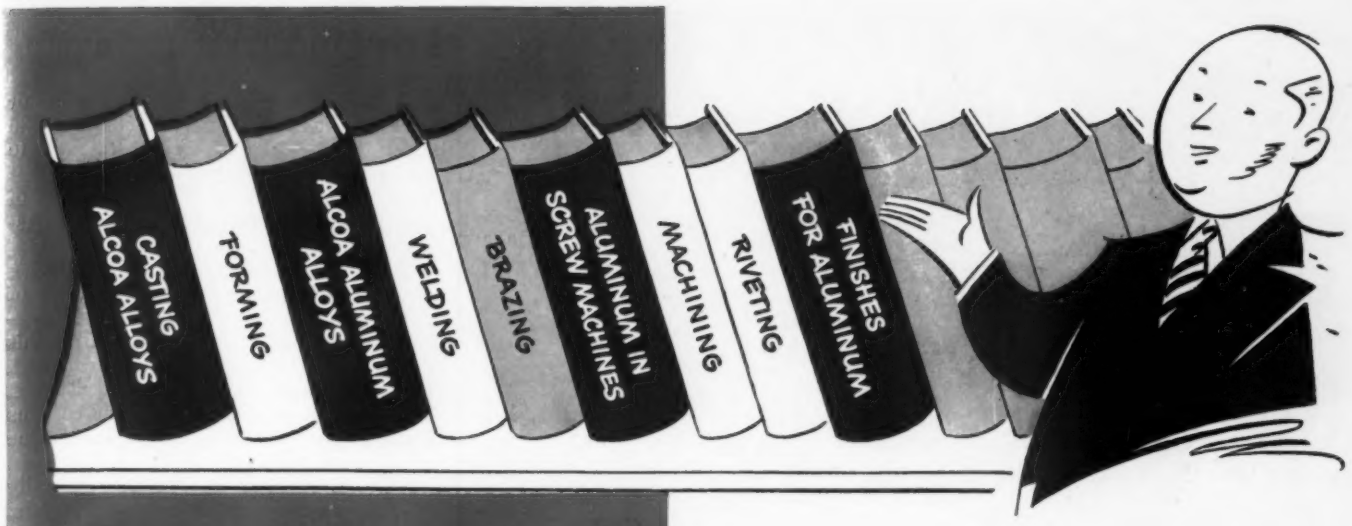
EXTERIOR MASONRY PAINTS

Complete data on the relative durability and performance of four general classes of masonry paints have recently been published by the National Bureau of Standards as Building Materials and Structures Report 110, *Paints for Exterior Masonry Walls.*

In recent years, the extensive use of porous masonry building materials has increased the need for more complete information regarding the durability of water-repellent and decorative finishes for such surfaces. To provide comprehensive data on this subject, exposure tests extending over a six-year period were made on a number of commercial masonry paints by Bureau chemists. Durability of the paints was determined on the basis of type of paint used, type of surface coated, methods of application and curing, and conditions of casting and painting. Ratings are given based on the weathering characteristics and performance of each type of paint, and painting methods for coating different surfaces are evaluated.

The booklet *Paints for Exterior Masonry Walls* (BMS 110), by C. Sentel, consists of 6 chapters totalling 19 large, two-column pages and is adequately illustrated with 15 half-tones, 1 chart, and 4 tables. It is now available from the Superintendent of Documents, U. S. Government Printing Office. Washington 25, D. C., at 15 cents per copy.

(*Please turn to page* 318)



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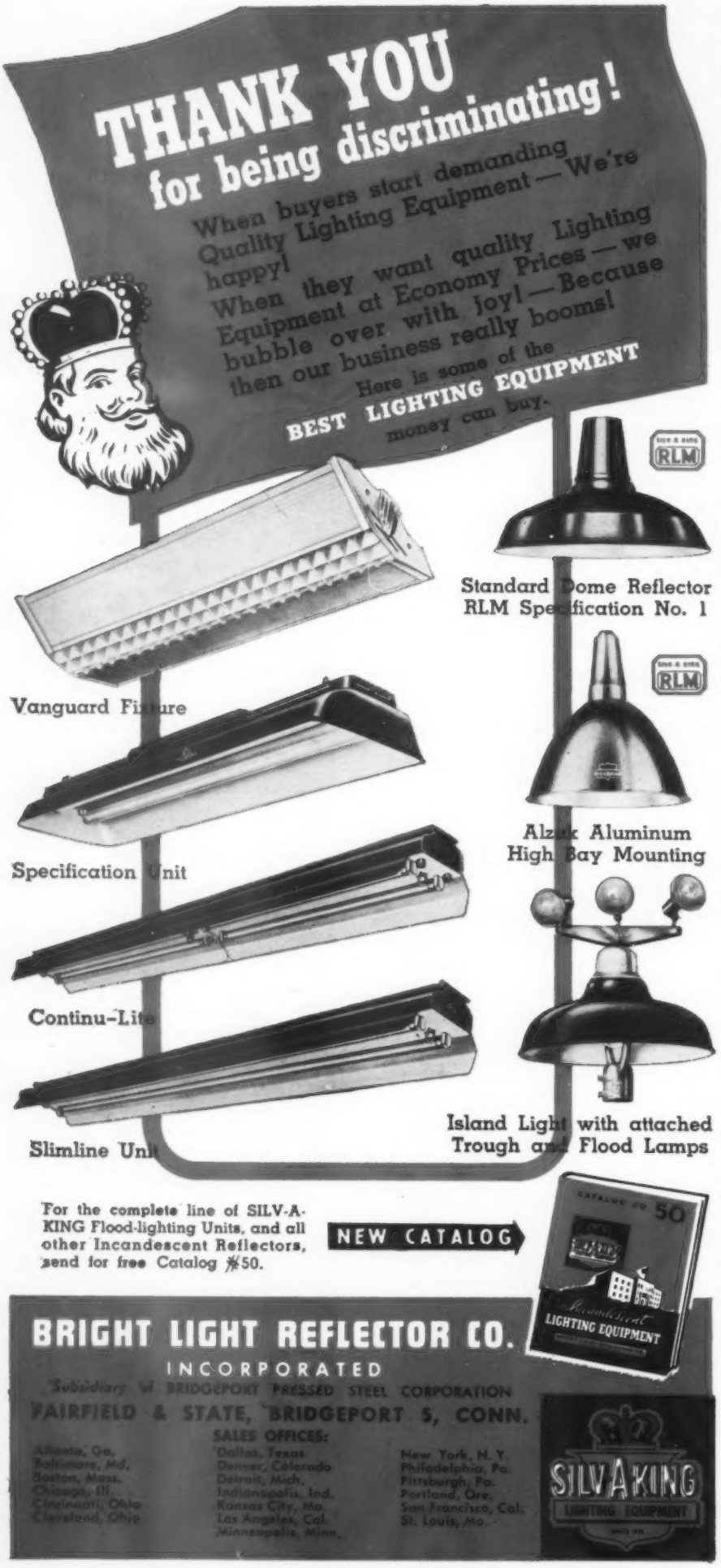

DECLARE POOR PACKAGING MAY LOSE FOREIGN MARKETS

A warning that inadequate, flimsy, or over-weight export shipping containers can result in the loss of foreign markets to American manufacturers and exporters has been sounded by L. S. Beale, secretary of the Wirebound Box Manufacturers Association, Chicago.

Beale issued his warning after receiving a written complaint from an importer of American goods in Venezuela that merchandise shipped in light cartons from this country frequently arrived there damaged, or, if over-packed in heavy wooden boxes, was often so heavily taxed at the customs house that profits were eaten up before the goods were delivered.

The Venezuelan complained especially about radio receivers and record players, but his letter indicated that other types of American goods also were inadequately or too-heavily packaged.

Mr. Beale described the letter as "an indication that American exporters, in their haste to procure foreign markets, have too frequently failed to pay proper attention to packaging." American goods, Beale warned, can lose foreign markets by either inadequate packaging that results in damages or over-heavy packaging that results in excessive tariff charges.

"Especially in exports," Mr. Beale said, "it is of paramount importance that merchandise not only reaches its destination in perfect condition, but also as inexpensively as possible. When tariff is paid on the gross weight of shipments, it means that American goods can be priced out of a foreign market if the shipping container itself is so heavy that it adds appreciably to the importer's cost.

"Foreign manufacturers and exporters are entering world markets and will increasingly do so. The wise American exporter will choose export shipping containers that give maximum protection to contents with minimum addition of weight."

* * *

U. S. CORDAGE FIBER PRODUCTION DWINDLES

Recent announcement by the United Nations Food and Agricultural Organization that the world shortage of natural industrial cordage fibers will probably continue for another two years, has served to call attention to domestic fiber production in the United States, according to Frank R. Metcalf, assistant treasurer and fiber buyer of the Columbian Rope Company.

"The War Assets Administration has reached the half-way mark in the disposal of the 42 hemp mills that were built in this country during the war years," he said. "Twenty-six of these mills, located in Indiana, Illinois, Kentucky, Iowa Wisconsin, and Minnesota, have been sold.

"Of the ones turned back to private operators, only one, at Union Grove, Wis., is being used as a hemp processing mill. All the others have been reconverted to uses having no relation to fiber production.

(*Please turn to page* 320)

Simplify *Your Tubing Purchases*

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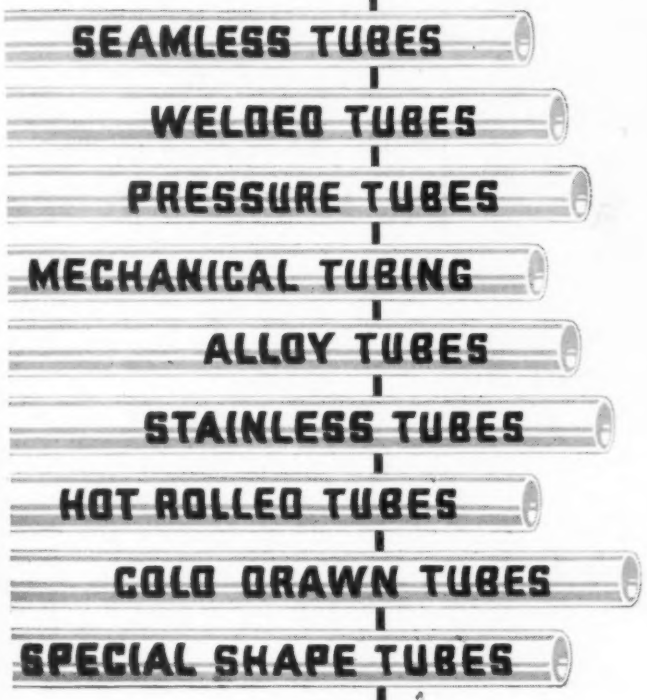

Finding the right tube—Seamless or Welded—for ANY pressure or mechanical applications in your plant or in equipment you make—is a simple problem when you call on B&W. In B&W tubing you have the widest choice of analyses available from one source . . . including a full range of SAE-AISI steels, and seamless and welded stainless grades.

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In many cases, authorized distributors in all principal cities can fill your orders promptly from local warehouse stocks . . . but remember to specify "B&W Tubes".

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• The right tape may expedite a packing job. The right tape may replace a costly hand-sewing operation, saving labor and improving the product. Still another may be the only material that will do a given job, such as resisting heat and acid fumes.

Bauer & Black Industrial Adhesive Tapes are *built for specific uses* in industry.

Engineers in hundreds of U. S. industries realize savings of 5 to 85% by using Bauer & Black Industrial Adhesive Tapes instead of conventional materials in applications like these:

> • *Tying, bundling and repair; waterproofing; identification; finger protection; sound deadening; moisture vapor barrier; insulation; oil, solvent and abrasion resistance; sealing and packaging.*

• Whatever your tape needs, we probably have the tape you want. If necessary and to our mutual advantage, we'll make the tape you need for your job. Write Dept. 9-4 today for full particulars.

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Industrial Adhesive Tape

PRESSURE SENSITIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

(*Continued from page* 318)

In spite of the wartime program to foster cultivation of hemp in the Mississippi Valley, development of hemp growing in the United States seems to be a thing of the past.

"Not a hard fiber like abaco, this American-grown hemp was used as a blending fiber in the manufacture of cordage for military uses. Unfortunately the United States always has been dependent upon hard fiber imports. Abaca, sisal and henequen do not fluorish in the semi-tropical belt that includes the Gulf of Mexico and several southwestern states. But even if the three fibers could be nurtured in the warm zones of this country, our comparatively high wage scales would make production costs prohibitive. The American cordage industry is looking forward to the time when it will be assured sufficient supplies of hard fibers to meet market demand."

N. E. STEELS ONE-EIGHTH OF POSTWAR STEEL OUTPUT

Of all alloy steels produced since the war ended, it is estimated that about one-eighth of the total were "N. E." or National Emergency steels, which were originally developed under emergency conditions, the American Iron and Steel Institute said recently. However, some of these steels have proved to be highly useful for peacetime purposes and remain in demand, although the need for conservation of alloys has been greatly lessened.

The N. E. steels have been standardized by the American Iron and Steel Institute and the Society of Automobile Engineers. Today, at least one of the most popular automobiles on the market uses the former N. E. steels, now known as "triple alloy steels," almost exclusively in its transmission, gears, axles, steering equipment, springs, and in certain other parts.

The triple alloy steels were created in 1941, and permitted the utilization of large quantities of high alloy scrap made available as alloy steel production rose to new record levels during the war. The machining of many war products resulted in high scrap losses, and this scrap was hastened back to the steelmaking furnaces to make the triple alloy steels.

ELECTRICAL CONDUIT SERVICE ANNOUNCED BY G-E

The General Electric Company, Bridgeport, Conn., has inaugurated a new service to supply conduit assemblies made up to the specifications of individual equipment manufacturers.

According to D. J. Murray, manager of the G-E conduit products division, the service is designed to simplify the manufacturing problems of any company which determines, either during the engineering or production stage, that its product has electrical circuits requiring the protection of conduit.

Mr. Murray said that the service aims particularly to help manufacturers of such products as oil burners, water heaters,

(*Please turn to page* 322)

Why not design for beauty and permanence? Stainless Steel is in better supply than carbon steel—you can get ALLEGHENY METAL, and we produce it in every form or shape you may need.

Complete technical and fabricating data—engineering help, too—yours for the asking.

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ALL-HARD REZISTOR POWER BLADE

is a real Post-War blade!

30% GREATER ENDURANCE

Yes . . . today's REZISTOR is a post-war development . . . made from a modern high speed steel known as M-2. Newly perfected heat treatment has made possible new high cutting records.

28% MORE STRAIGHT CUTS

The REZISTOR of 1940 was a splendid blade . . . but . . . the REZISTOR of 1948 will show far greater endurance, make more straight cuts per blade, and cut faster. Large quantities of blades, tested in our own laboratories, and on several makes of hack saw machines tell us this is true. They are our proving grounds. Your own machines are yours.

5% FASTER

The proof . . . compare MILFORD REZISTOR with any high speed steel blade you now use.

Order from your mill supply distributor. He is always ready to serve your needs for all factory and mill supplies, as well as MILFORD hack saw and band saw blades.

MILFORD PROFILE AND BAND SAW BLADES REZISTOR AND DUPLEX HACK SAW BLADES

THE HENRY G. THOMPSON & SON CO.

Saw Specialists Exclusively for Over 70 Years

NEW HAVEN 5, CONNECTICUT, U. S. A.

(*Continued from page 320*)

major appliances, textile machinery, machine tools, trailers and pumps.

"By ordering a complete wiring assembly to fit his specific production problems, the manufacturer can not only eliminate or simplify the costly operations involved in cutting, threading and bending conduit stripping and tinning wires and selecting and adding wiring devices, but also speed production, occupy less floor space and improve the quality of his product," he said.

General Electric conduit assemblies are supplied with or without wire, in flexible or rigid conduit or EMT, and with practically any wiring device needed.

Assemblies are sold through the Company's franchised electrical wholesalers.

* * *

MAKES WATER WETTER FOR FIRE FIGHTING

A newly developed concentration of organic chemicals of such extremely fast penetrating action that, added to water in small amounts, it increases the fire extinguishing action of water 200 to 400 per cent, was announced at the annual meeting of the American Society of Mechanical Engineers, by chemical engineers of the Carbide and Chemicals Corp., New York, N. Y. The new penetrant is known as Unox. Normal use calls for 1 part of the penetrant to 100 parts of water; in some cases less. It was used in fighting forest fires in the East last fall, and reports state that it appeared to be particularly effective in mopping up operations where fire might be expected to reflash or rekindle, and that its use makes it possible to deeply soak rotten logs, punk and similar fuels, reaching the heart of the fire without resort to an axe. Hollow snags with punk cores were easily saturated.

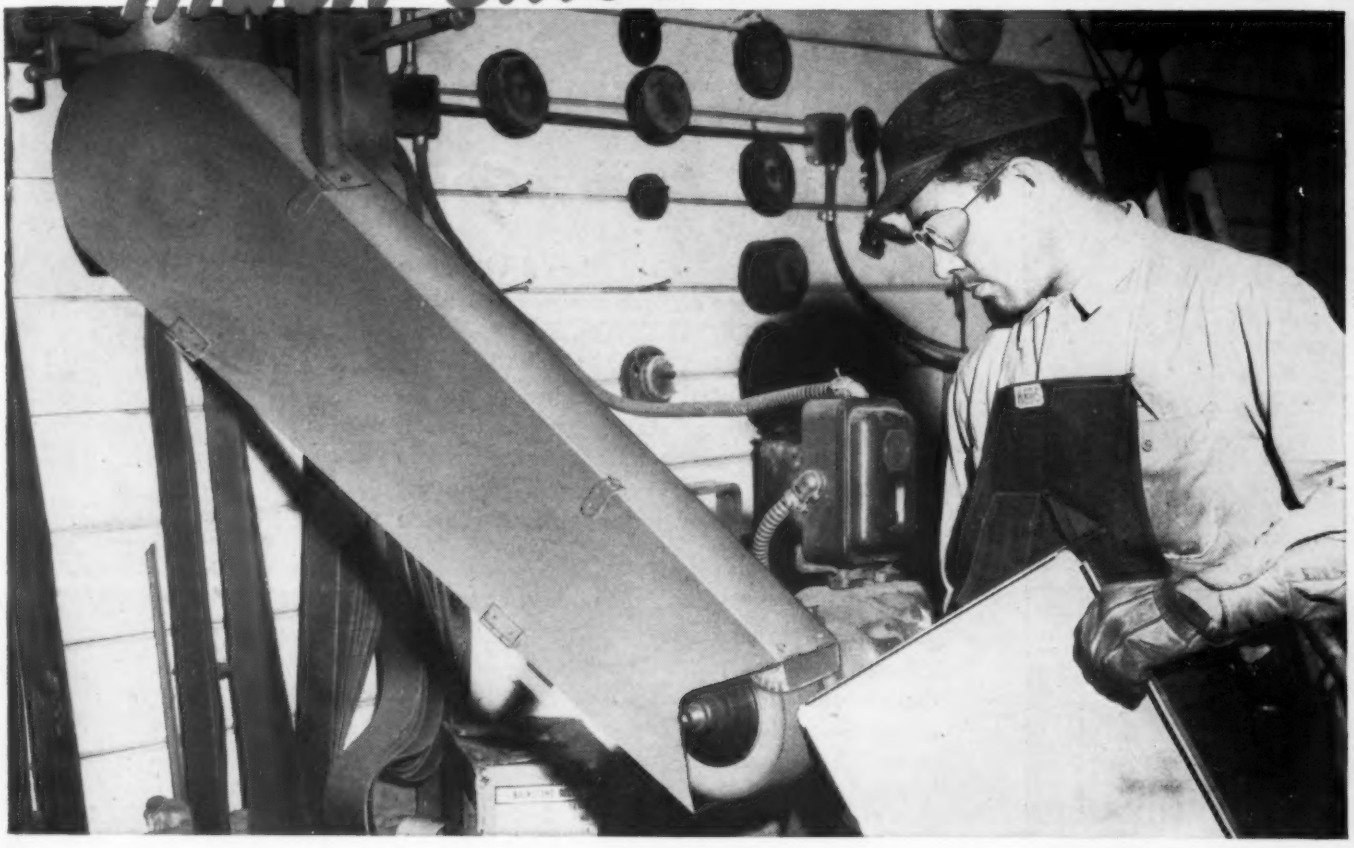
A report of a test of the penetrant by the U. S. Forest Service in Virginia indicated that on mop-up operations where a solution of ½ percent was used, an average of ½ gallon of solution per stump was required for complete extinguishment, with no rekindling. When plain water was used, an average of 1¼ gallons was used per stump with 95 percent rekindle.

The penetrant has also been used by municipal fire departments. It was indicated that "on the average building fire, extinguishment can be effected more rapidly with 3 to 5 times less water." In every case there has been a marked reduction in smoke generation and water damage was practically eliminated.

Large scale experiments have been conducted with burning bales of cotton and paper and "the ratio of efficiency was much higher" than for plain water.

Another characteristic of the wetting agent is its ability to spread and creep over a surface. Tests using water to protect metal surfaces, such as storage tanks, from radiated heat "indicate that when a wetting agent is present in the water, the cooling efficiency is increased by as much as 50 percent.

50% FASTER JOBS... much smoother finishes



BIG SAVINGS RESULTED when this refrigerator manufacturer changed from setup wheels to 3M Abrasive Cloth Belts. Studies of his stainless steel weld grinding and finishing operations show production is 50% faster, with far better finishes.

This is typical of many reports we have received telling us of the spectacular results secured with 3M Abrasive Cloth Belts and 3M Contact Rolls. This *engineered* grinding and finishing method not only removes more metal per minute but also produces finishes that require little or no buffing . . . features that mean lower production cost and faster production time.

No matter what the surface to be finished, whether flat or contoured, molded or forged, there is a 3M *engineered* method to do the job for you faster and better. Ask your local distributor of 3M products for complete information on this cost-cutting method or use the coupon below to secure a free copy of our booklet "Step Up Production."

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Please send us a copy of your booklet "Step Up Production."

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3M ABRASIVE BELTS

ANOTHER 3M COMPANY PRODUCT

Made in U. S. A. by
MINNESOTA MINING & MFG. CO.
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For Rewiring and Relighting *Adequately*

SURFACEDUCT
Lighting Applications

Versatile NE *Surfaceduct* offers the lighting engineer a 2-piece surface raceway UNSURPASSED FOR CONVENIENCE, STURDINESS, CIRCUIT ROOMINESS AND ACCESSIBILITY. It is readily adapted to any kind of an installation or lighting fixture. May be used in either exposed or concealed locations. Unique bridge locks capping securely in place yet permits easy removal for future service additions.

Eight device covers accommodate over 300 manufacturers devices. Twelve simple fittings meet all job requirements. Over-all dimensions: 1⅝" x 2⅛". *Capacity with devices installed:* Ten #10, #12 or #14 wires. Designed for loads up to 60 amp. Write for complete catalog.

Leading electrical wholesalers have stocks for immediate delivery.

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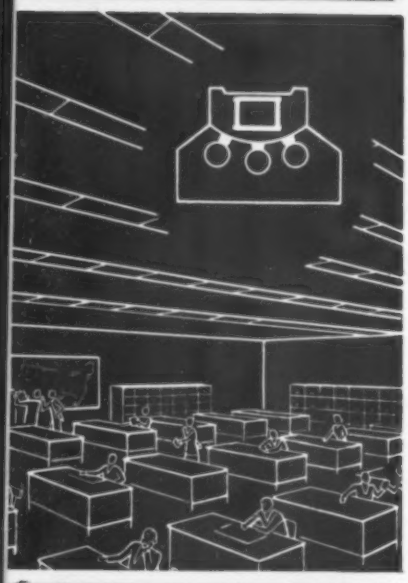
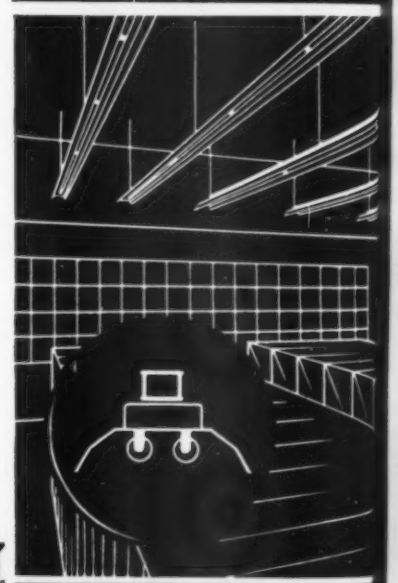
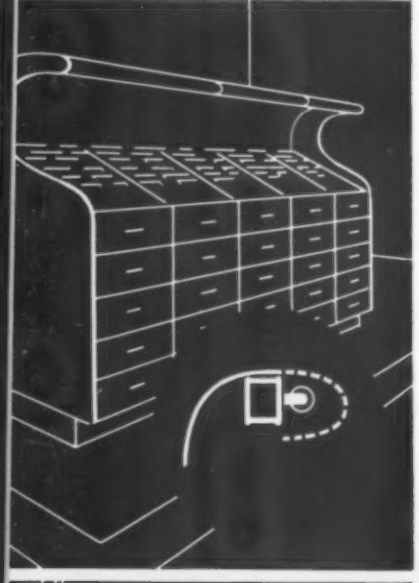
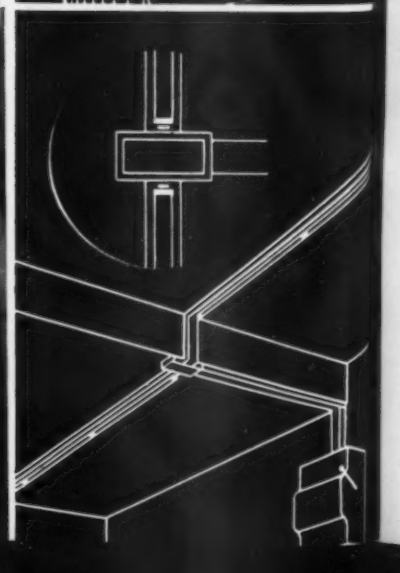
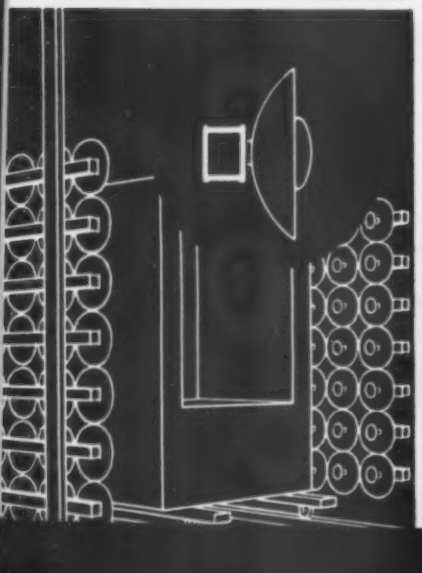
Pittsburgh 30, Pa.











SUPPLEMENT TO TUBE-TURN CATALOG AND DATA BOOK

The Tube-Turn Catalog and Engineering Data Book No. 111, which has come to be regarded as the "bible" on the subject of welding fittings and flanges for industrial piping, now has a 20-page supplement.

The supplement is devoted to specifications that cover new items in the continually expanding line of Tube-Turn fittings. It is 6" x 9" and slips easily into the pocket provided for this purpose on the inside back cover of No. 111.

The supplement to Tube-Turn Catalog and Engineering Data Book No. 111 may be had without charge by writing to: Tube Turns, Inc., 224 East Broadway, Louisville 1, Kentucky.

BOOKLET ON WATERPROOF BAGS

"A Book You Can Bank on to Save You Money" is title of a 12-page booklet describing the jobs than can be done with waterproof laminated textile bags, being distributed by Bemis Bro. Bag Co., St. Louis 2, Mo. The booklet tells how waterproof bags are designed to give low-cost protection against packing, storage and shipping difficulties encountered when a product must be protected against such hazards as change in moisture content, contamination, sifting losses and insect infestation.

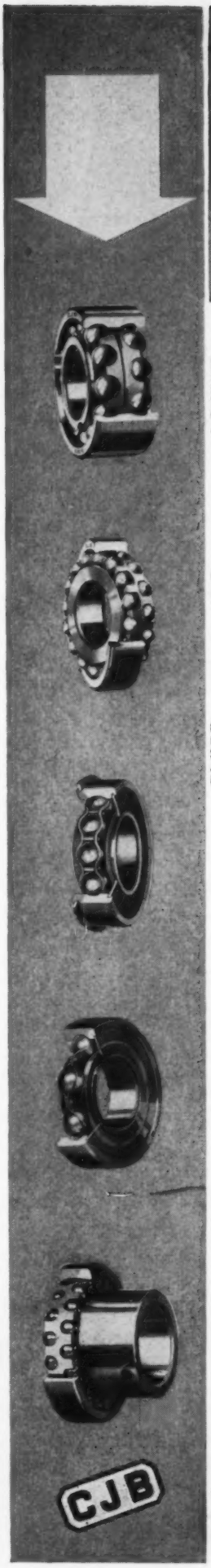
The bags, made of one or more layers of creped kraft paper laminated to cotton or burlap cloth, can also be made lintproof, acid-resistant, grease—or oil-resistant. The booklet illustrates the variety of bag-closing methods, seams and special construction which make it possible to "tailor" a bag to meet nearly any shipping requirement.

FREE BOOKLET ON INDUSTRIAL SAPPHIRE

Information regarding the uses and properties of industrial (manufactured) sapphire have been assembled in a pamphlet entitled "Why Sapphire?", available from the Sapphire Products Division of the Elgin National Watch Company, Aurora, Ill.

A bibliography is included, in addition to technical data on sapphire products. Industrial sapphire has proved highly successful for use in bearings, depth gages, burnishing tools, knife edges, vee blocks, anvil inserts, dies, styli, contact points, honing tools, nozzles, orifices, plug gages, ring gages, lathe centers and wire guides.

Sapphire has been found to be many times harder than the hardest steels available and tougher than any man-made material of similar hardness. Other properties of industrial sapphire include dimensional stability and non-corrosion. Sapphire will not change with age and it will withstand temperatures up to 3000 degrees F. It can be polished to a sensibly perfect finish, is non-magnetic, and its coefficient of friction is lower than that of any other material.



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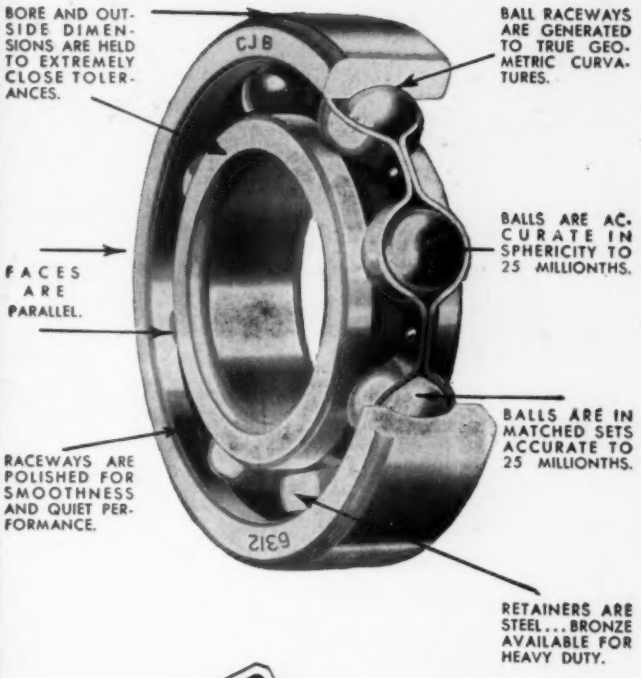
Run Smoothly • Quietly with Long Life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BALLS ARE ACCURATE IN SPHERICITY TO 25 MILLIONTHS.
FACES ARE PARALLEL.
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RACEWAYS ARE POLISHED FOR SMOOTHNESS AND QUIET PERFORMANCE.
RETAINERS ARE STEEL... BRONZE AVAILABLE FOR HEAVY DUTY.
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CJB Ahlberg Ball Bearings are precision assemblies of these quality components, engineered and manufactured for top performance. **Ahlberg Bearing Company, 3039 West 47th Street, Chicago 32, Illinois.**

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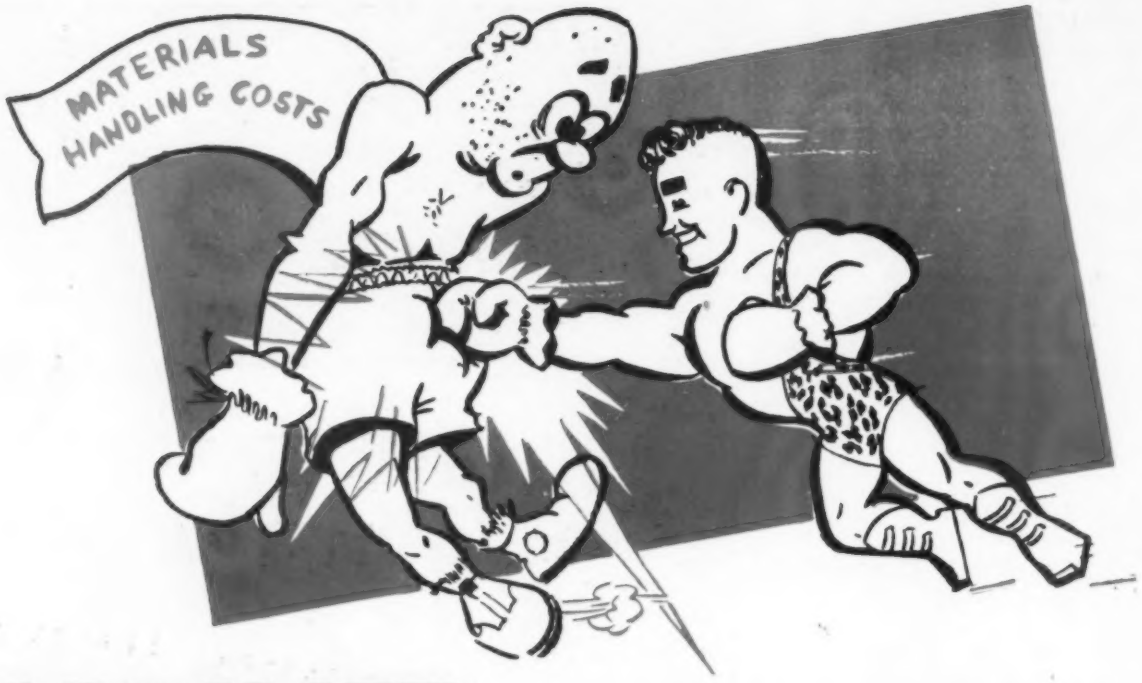

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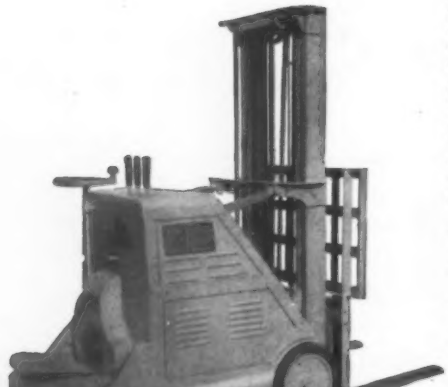
A Cost Cutter with a Punch!

It's a tough battle, this constant fight to keep production costs down. Shortages keep material costs up. Labor costs are high and steadily increasing. Taxes are as high as ever.

But there is one logical way out—and that is in handling materials. Handling costs are no match for Mobilift—affectionately known as "The Mighty Midget" by thousands of users. Mobilift, because of its size, its ease of handling and its all around operating speed has many economies. It makes more trips per hour—moves more tonnage per day than any other fork lift truck on the market. It saves time, space and human energy. It cuts handling costs in every department from the loading platform to the warehouse. Put the Mighty Midget to work cutting costs in your plant or warehouse. Send for our 16-page illustrated folder on modern Mobilift operation.



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SALES OFFICES IN MAJOR CITIES

WIRE ROPE INSTITUTE PUBLISHES HANDBOOK

The Wire Rope Institute, representing most of the country's wire rope manufacturers, has published an attractive, 2-color combination catalog and handbook for general distribution to wire rope users.

The new 119-page publication, "Wire Rope", prepared and edited by the institute's technical committee, contains useful information in the selecting, buying and using of wire ropes, along with data on fittings, attachments, splicing, and other related subjects. Copies are available without charge by writing to the institute, 1044 Shoreham Building, Washington 5, D. C., Dept. 711.

REYNOLDS ISSUES BOOKLET ON ALUMINUM SHEET & PLATE

Reynolds Metal Company, Louisville 1, Ky., has released a booklet containing 48 pages of technical information relative to various sheet and plate alloys, gauges and sizes. The book is designed to meet the needs of the experienced user of aluminum as well as to give the newcomer a clearer insight into aluminum's advantages.

Compartive analysis of costs; summaries of topics and such as formability, weldability, riveting and joining, brazing, etc.; definitions and mill standard sizes; tables for computing the weight of various sizes and thicknesses of sheet and plate items; and an index of specifications for aluminum sheet and plate as listed by the various government bureaus and several professional societies, are among the features contained in the booklet. Copies may be obtained by writing to the company.

"TOOL STEEL SIMPLIFIED" NEW EDITION

To give buyers and users of tool and die steel information covering the latest developments in toolmaking and heat treating, a new 564-page edition of "Tool Steel Simplified" has been published by the Carpenter Steel Company, Reading, Pa. The cloth bound book has 564 pages, and a total of 355 diagrams, charts, photographs, and tables to clarify the text. The book is available at cost—$2.00 each, postpaid in the United States; $2.50 elsewhere.

Since it was originally published ten years ago, new and improved steels, new types of heat treating methods and equipment have come along, and much of the material in the revised edition is new and never has been published before.

The revised edition helps buyer and user to select the proper steel for each job Part I contains chapters on Tool Steel Terms; Tool Steel,—What it is; The Analysis of Tool Steel; The Character of Tool Steel; and, The Soundness of Tool Steel. Part II deals with Selecting the Right Tool Steel for Each Kind of Tool. Part III covers Properties and Heat Treatment; and Part IV covers a variety of subjects such as design, timbers and hardenability tests, spark testing, furnace atmosphere,

(*Please turn to page* 328)

The most valuable drink in the World!

RECENT scientific studies* indicate that employee efficiency increases if water lost through perspiration is replaced.

That is why refreshingly cool water from handsome General Electric Water Coolers may mean increased production to you. Spotted about your plant at strategic locations, General Electric Water Coolers can help pay for themselves in higher employee efficiency!

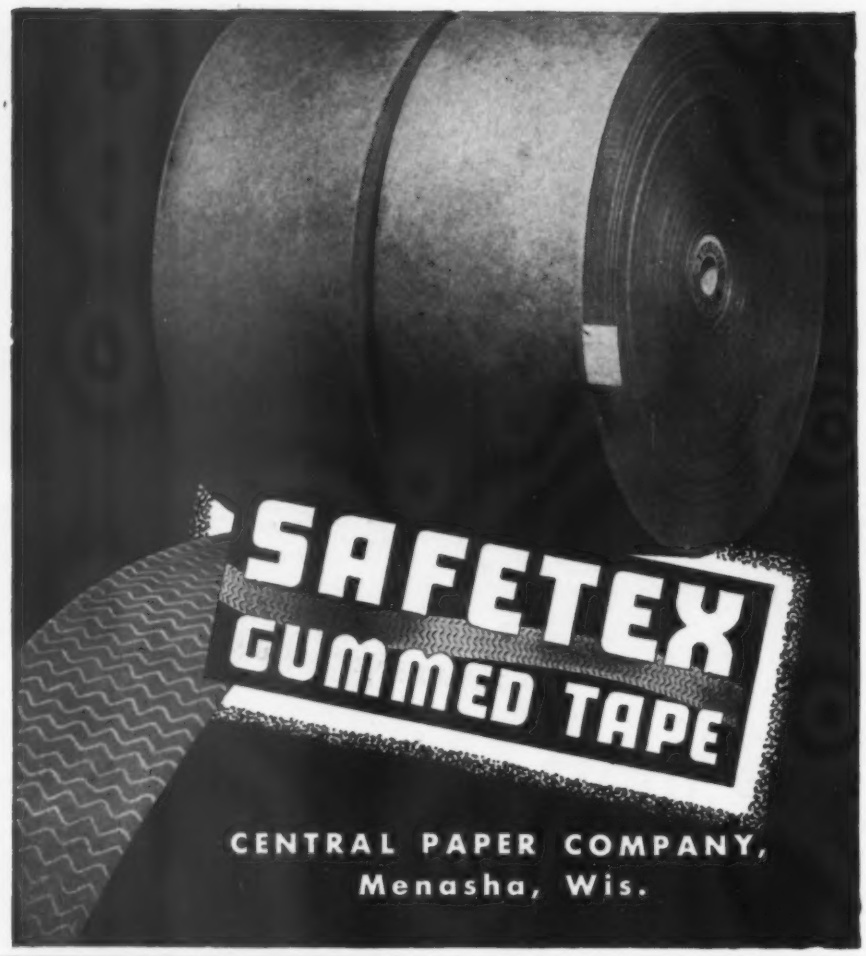
Sturdy . . . precision built for years of trouble-free performance, G-E Water Coolers are smartly compact to save space. Choose either the bubbler or the bottle cooler. Both are economical to operate . . . just a few cents a day! Call your G-E Dealer for full details.

General Electric Company, Air Conditioning Dept., Section W 8294, Bloomfield, New Jersey.

*American Journal of Physiology, Vol. 142, No. 2

GENERAL ELECTRIC

Water Coolers



Where Was Your Watchman
at 2 o'clock this morning ?
That's easy — if you use the CHICAGO WATCHCLOCK system. It not only gives you the exact answer in permanent form, but its vital additional protection finally costs you nothing — because the
CHICAGO WATCHCLOCK System
reduces users' insurance rates!
ASK for illustrated folder — just off the press. Shows the new CHICAGO SPARTAN A Model.
The first — and still the first!
CHICAGO WATCHCLOCK Corporation
Offices in Principal Cities
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WIREGRIP precision made Belt Hooks come with extra (patented) blue aligning cards—are held more rigid, assuring perfect alignment of hooks—less hook loss from handling—a better job when applied with any make lacing machine. 6 sizes.

STEELGRIP Flexible Lacing, applied with a hammer, clinches over and protects end of belt. Makes strong, flexible joints. Boxed with 2-piece hinged rocker pins or can be obtained in long lengths for conveyor belt use.

(*Continued from page 327*)

quenching and tempering, trouble shooting, etc. Part V contains the Index, and numerous tables. Another useful, practical feature is an alphabetical Tool Steel Selector.

The authors are Frank R. Palmer, vice president of The Carpenter Steel Co., who has a background of many years in the manufacture, use and heat treatment of tool steel, and serving the field in the capacity of "mill expert"; and George V. Luerssen, chief Metallurgist, Carpenter Steel Company, who has had almost 40 years of practical experience in the manufacture and application of tool steel.

Books can be obtained by writing direct to the Carpenter Steel Company.

"ARC WELDING AT WORK" ALL-COLOR SOUND MOVIE

A new "More Power to America" program designed to show how increased use of electric arc welding in industry can reduce manufacturing costs and produce better products has just been released by the General Electric Co. Showings of the program, which features an all-color sound movie "Arc Welding at Work", are being given throughout the country by local electric utilities and G-E welding distributors.

Scene from "Arc Welding at Work" showing operator making welding seams in 4½" thick steel boiler drum

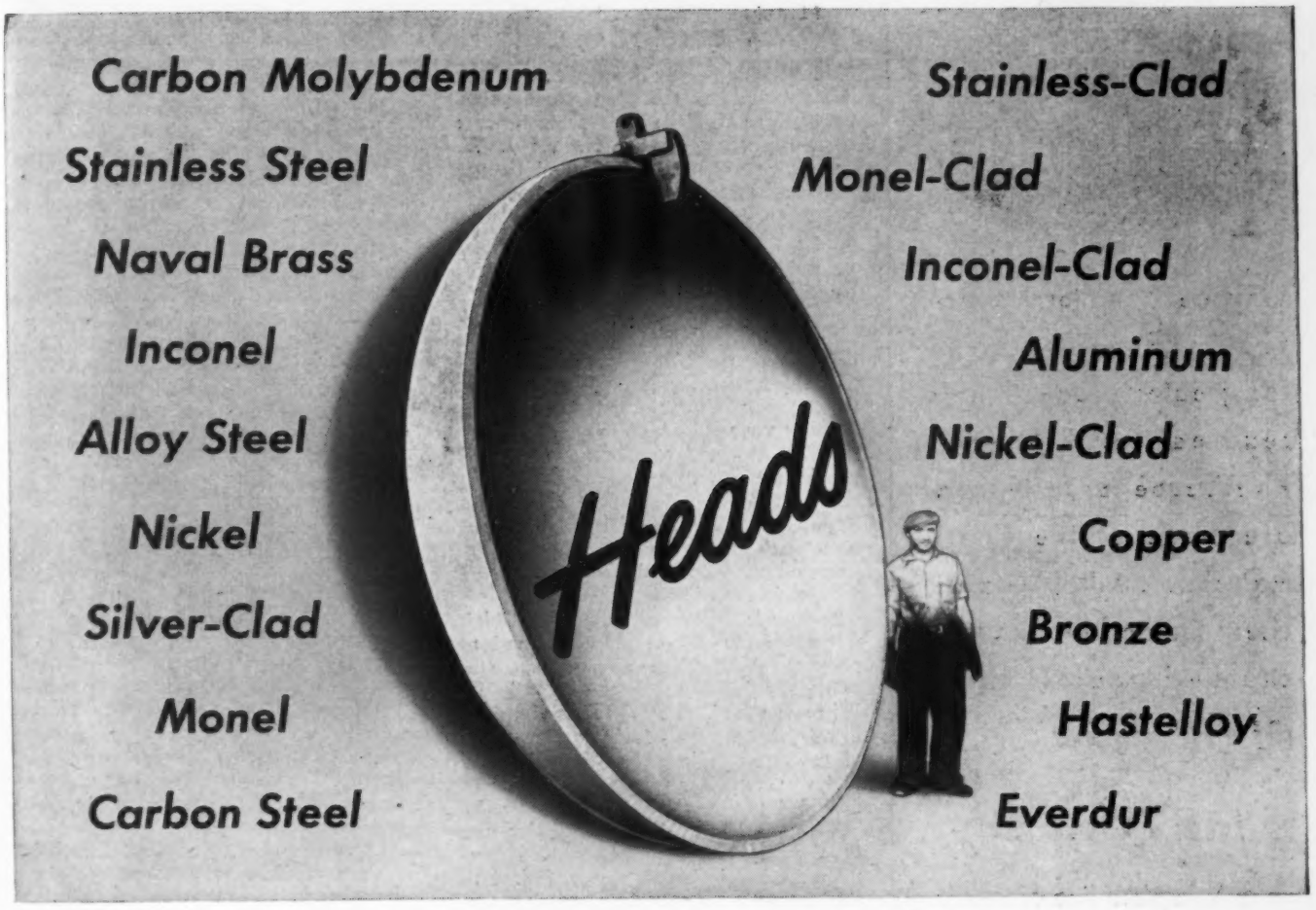
"Arc Welding at Work" features 53 outstanding electric welding applications photographed in the plants of metal fabricators and manufacturers. It shows the latest developments in metal-arc, atomic-hydrogen, and Inert-Arc welding, both manual and automatic.

Besides the film, the new program is made up of an application manual "Electric Arc Welding," and a handout bulletin, "Cut Costs and Improve Quality with Electric Arc Welding." The handout bulletin condenses the material given in the manual and film into 12 pages of information.

WATER DEMINERALIZATION BY ION EXCHANGE SHOWN IN FILM

"Water, Water Everywhere" is the title of a 16 mm. sound film in color, issued by the Ion Exchange Products Department of American Cyanamid Co., and devoted to an explanation of what

(*Please turn to page 332*)



. . . in a wide variety of materials

Lukens makes heads of carbon and alloy steels, including stainless—nonferrous metals such as nickel, Monel and Inconel, aluminum and silicon bronze—and the widest range of clad steels available anywhere. Select the commercial metal that will solve your pressure, temperature or corrosion problem and Lukens will fabricate the heads you need.

Size and gage are no problem with Lukens either; $\frac{3}{16}$ inch to 6 inches thick, or 4 inches to over 18 feet in diameter. New spinning equipment is being installed to produce heads in even larger sizes.

Lukens Standard Head Stock List—Bulletin 433—shows the sizes and gages of carbon steel heads regularly stocked and ready for immediate shipment. For a copy, and for Catalog No. 1, describing 3,868 Lukens Heads, write, on your company letterhead, to Lukens Steel Company, 415 Lukens Building, Coatesville, Pa.

LUKENS
HEADS
★

"Head Work", a 16mm motion picture in sound and color, on spinning and pressing of Lukens Heads is available without charge. Running time: 27 minutes. Write for a booking date.

FOUR INCHES TO OVER EIGHTEEN FEET IN DIAMETER

may be a major control factor in your search for greater production — reduced costs. Milford Rivet's *superior* fastenings are made of the finest materials available—precisely finished — minutely checked against rigid specifications.

MILFORD'S

complete line of

Tubular, Split and Compression rivets — Cold Headed Specialties — Rivet caps, Bottom Studs

has cut production costs for thousands — let it serve you.

Let Milford's three-point program (Machines, Rivets, Engineering Consultation) serve you.

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ELYRIA, OHIO

RELIABLE SPRING APPOINTS NEW REPRESENTATIVES

The Reliable Spring & Wire Forms Co., Cleveland, O., has announced the appointment of three district sales representatives: A. H. Burnap, Syracuse, N. Y.; J. W. Cremens, Jr., Galesburg, Ill.; and George J. Mohr, Pittsburgh, Pa.

FORSEES INCREASED INDUSTRIAL USE OF PLASTIC TOOLING

Application of plastic tooling to industries other than the aircraft, as an effective adjunct to, or improvement over, existing methods, was forecast by Lawrence Wittman before the rubber and plastics session of the Annual Meeting of The American Society of Mechanical Engineers. Mr. Wittman is tool development engineer of the Republic Aviation Corporation, Farmingdale, N. Y.

"Plastic tools in the form of low pressure molded,—'cooked' to order—high strength laminates have been proved to possess a high degree of accuracy, stability, durability and permanency," Mr. Wittman stated. "The simplicity inherent in this method of producing a large class of tools results in substantially lowered tool costs and the greater utilization of unskilled personnel."

Though developed primarily for use in aircraft manufacturing, molded laminate tooling is by no means limited to that industry nor to sheet metal manufacturing alone, he said. It is applicable wherever special, or project tooling is used to form, fabricate, check or hold components in position for various operations during the manufacturing process. This will especially hold true wherever such tools must incorporate complex shapes or contours.

It is now practical to produce consistently any number of duplicates of a tool which possess accuracy hitherto virtually impossible to attain with steel tooling, he continued. This feature will be of significance in dispersed plant operations requiring close coordination of tooling and where production volume necessitates duplicate tooling.

Mr. Wittman pointed out that because of the light weight and relatively thin cross section, tool size, either small or large, does not impose any limitation on the use of the molding process. In addition, where tool portability is required, the low weight of laminates becomes an important attribute.

Of the many types of materials tested and used during the war for plastic tooling, a few have found a place in the post war economy, he said. During the war, the greatest amount of attention and work was concentrated on cast plastic development. It was found that the combination of glass cloth with an asbestos filled phenolic casting resin represented an improvement over straight casting.

Mr. Wittman said that included among the types of contoured fabricating tools now made exclusively of glass laminate at the Republic Aviation Corporation are the following: checking fixtures, drill jigs (drill nests, cages, bases), assembly, spotweld and installation fixtures.

Observation of the stability, accuracy, wear resistance and ruggedness of more than 1000 of these tools produced within the past two years has made Mr. Wittman conclude that "molded laminates can be expected to have long tool life and for that reason can be classed as permanent tooling materials."

Mr. Wittman stated that some of the aircraft tooling applications hav possibilities in other industries where higher production rates are the rule. As examples he mentioned drilling, checking and assembling fixtures in industries such as wood, plastics, metal and automotive.

Applications for the future cited by Mr. Wittman include metal forming tools, milling fixtures, and such basic tool typs as Master Models, Keller Models and Spotting Fixtures.

FLASHING ELECTRONIC "FLARE" FOR HIGHWAY USE

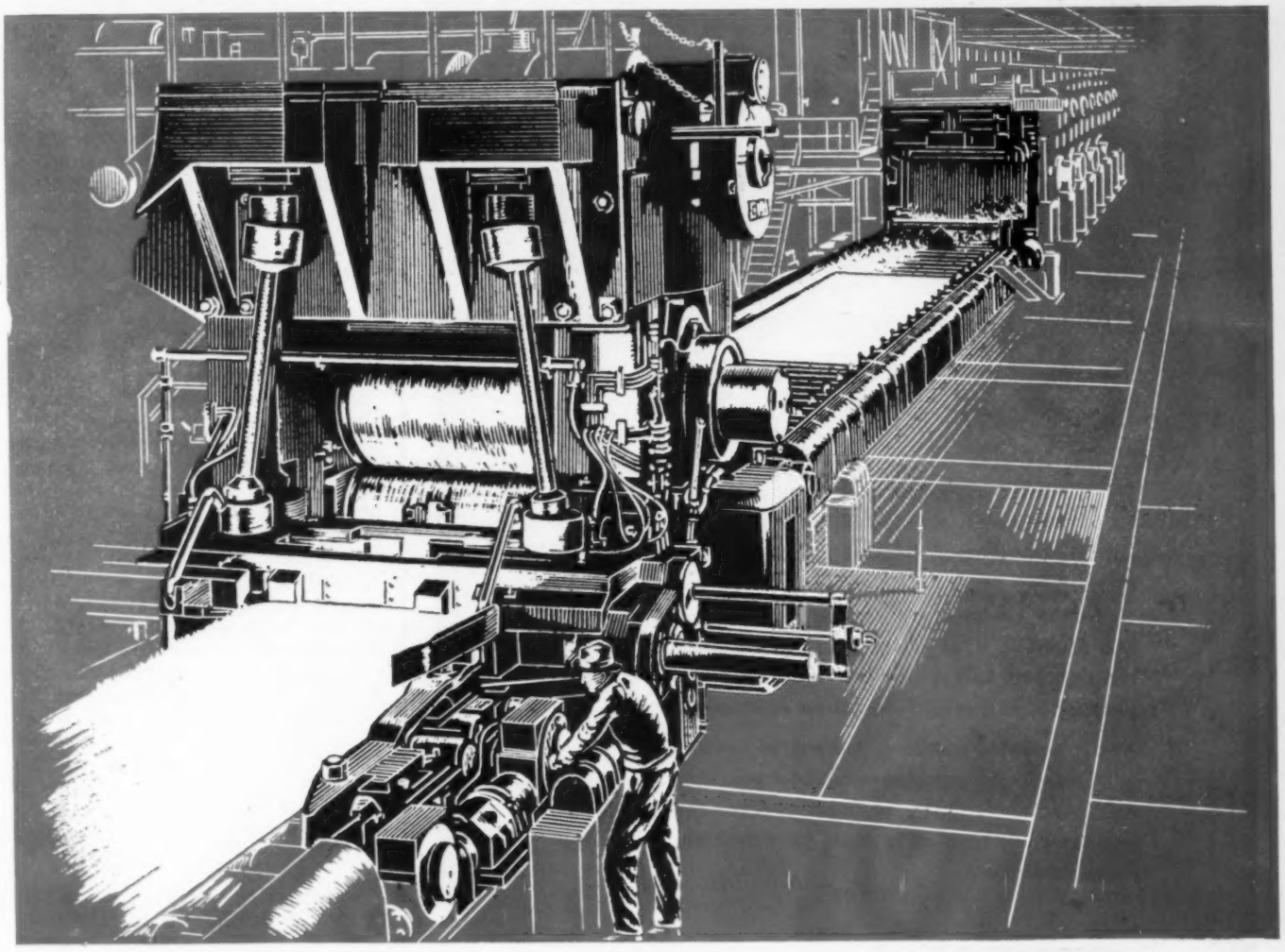
Portable flashing electronic "flare", which starts a flashing warning the instant it is picked up by its steel wire handle, has been developed by the Signal Manufacturing Corp., 624 S. Michigan Ave., Chicago, Ill. The red neon light of the beacon is clearly visible at distance of 500 feet, and it is said to penetrate rain, fog, sleet and snow. A Fresnel "lighthouse" lens keeps the beam of light in a horizontal plane, easily seen in any direction. The manufacturer states that the beacon meets the requirements of the Interstate Commerce Commission and also is listed by Underwriters' Laboratories, Inc.

Thoro-Flare is equipped with neon light

Known as the Thoro-Flare, it will operate continuously for 100 hours on a standard 6-volt lantern battery—longer if used intermittently, and functions in summer heat or sub-zero cold. It is recommended for us eon highways, streets, airports, yards, docks, railroads, etc., when there is need for warning lights or flares. The Thoro-Flares are available in complete kits, consisting of three flares in a steel weatherproof case, or as single units. The individual unit fits in the glove compartment of a passenger car.

SEE CLASSIFIED SECTION PAGE 358

YES! Tycol Apreslube Lubricants perform better . . . BETTER . . . BETTER



Tycol Apreslube Lubricants perform better because:

. . . *Tycol Apreslubes* are high quality oils, blended to assure maximum heavy duty lubrication.

. . . *Tycol Apreslubes* resist corrosion, even in the presence of moisture.

. . . *Tycol Apreslubes* will not separate while in storage or service.

. . . *Tycol Apreslubes* are engineered to "take it" without thinning down and dripping out, keep bearings . . . pistons . . . gears friction-free and cool.

For more information on Tycol Apreslubes and the other Tycol industrial "engineered" lubricants, write your nearest Tide Water Associated Office.

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How about the polishing, buffing or burring stations in your plant? Perhaps Lea can show you how to increase the speed and quality of finish and cut the cost. Our engineers will be glad to study your problem and submit recommendations.

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16 CHERRY AVENUE • WATERBURY 86, CONN.

Burring, Buffing and Polishing . . .
Manufacturers and Specialists in the development of
Production Methods, Equipment and Compositions

(*Continued from page 328*)

ion-exchange offers in various industries. and what advantages demineralization by ion-excrange oers in various industries.

The principles of ion-exchange are illustrated by animated drawings; batches of the ion-exchange resins manufactured by the company are followed through research, pilot-plant, and commercial scale production; various demineralizers are shown in operation; and the uses for demineralized water in a number of industries are illustrated. Request for the film, which runs for twenty-three minutes, should be addressed to the company at 30 Rockefeller Plaza, New York 20, N. Y.

* * *

NEOCETA BRISTLES DEVELOPED BY PITTSBURGH PLATE GLASS

Neoceta, from the Greek "neo" meaning "new" and the Latin "sita" meaning bristle, is the name synthetic paint brush bristle developed by the the Brush Division of the Pittsburgh Plate Glass Company in pre-war research. Constant refinement of production during five years of manufacturing and usage, it is said, has advanced the synthetic bristle to the place where it is equal to natural bristle for many applications and superior in at least one.

In its resistance to the softening effect of water—quality that has taken on new importance with the wide use of resin emulsion and other water-thinned finishes—Neoceta will absorb less than 3 percent of its weight and consequently keep its elasticity and snap. Natural bristle will absorb up to 60 percent of its weight in water and as a result become soft and flabby.

"Flag" Theory Modified

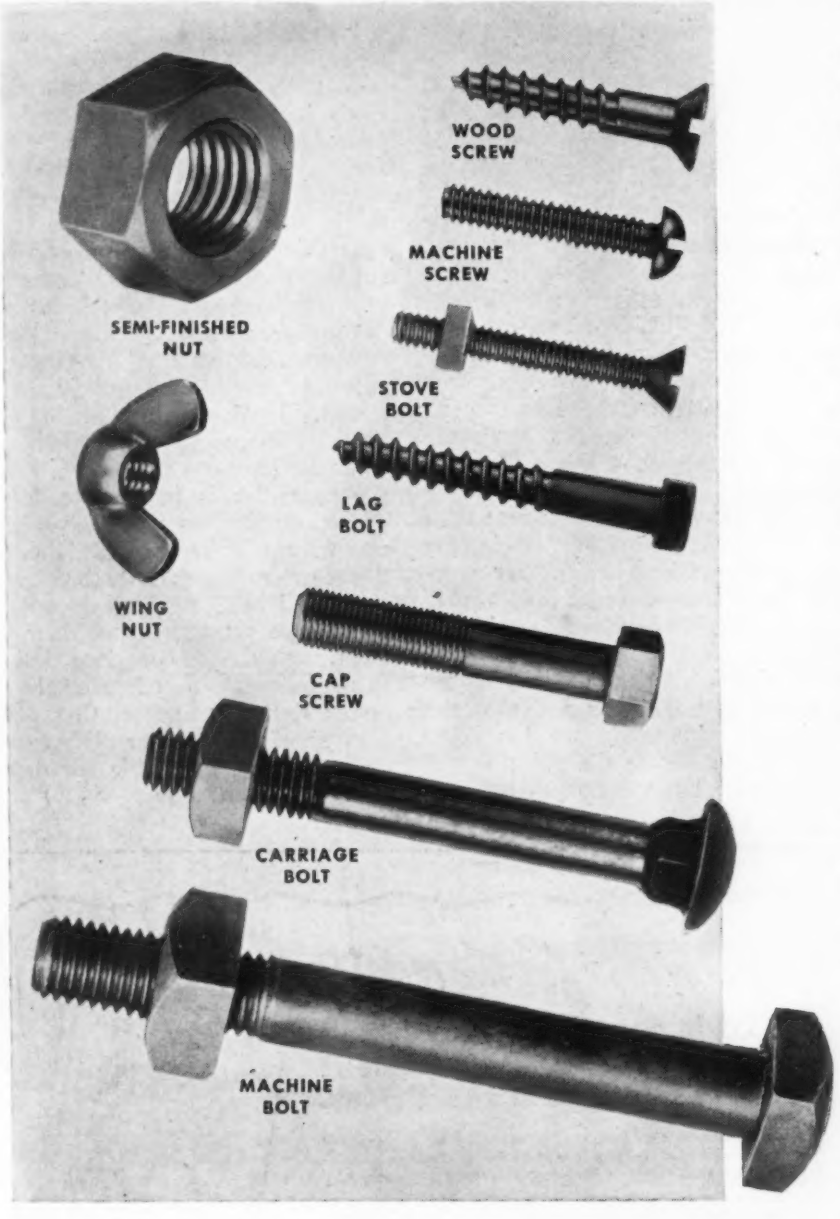
For years brush manufacturers believed that paint-holding and paint-spreading qualities of brushes were solely dependent on the "flag" or split-end found on all hogs' hair bristle. But, since a brush holds paint as well and spreads or "flows" it better after the "flag" has been worn, further research was necessary. The microscope gave the answer—hog bristle has a scaly surface which holds paint and lets it flow gradually.

Neoceta was designed with a rough texture, a taper to give it resilience, "spring," and natural stiffness. Five years of testing and actual use have demonstrated that brushes made with Neoceta bristle will: (1) Hold the right amount of paint; (2) Spread paint readily; (3) Keep their stiffness better than natural bristle in paint containing water; (4) Not mar or finger; (5) Wear like imported hog bristle.

The improved Neoceta bristle is uniform and of a finer texture than formerly. Thicker gauges have been replaced with finer ones possessing the same electricity, and with improved capillarity Neoceta is said to be slightly more efficient than natural bristle in carrying and applying paint. Because its rate of wear is the same as that of bristle, Neoceta and bristle are also combined in the longer length brushes with completely satisfactory results.

"NATIONAL'S" COMPLETE FASTENER LINE

Makes your buying EASIER



You can buy all your headed and threaded fasteners from one source when you order from "National". For standard bolts, nuts and screws, or special fasteners to meet your individual problems, "National Screw" has the facilities to make every type of fastener you require.

With its wide variety of manufacturing equipment, "National" is the only manufacturer who makes all of the fasteners illustrated here. Also, "National" makes tacks, rivets, cotters, tapping screws, plow bolts, locknuts and many other fasteners.

For the products you manufacture, "National" can supply you with the right fasteners to make your products fit better—stay tighter—or operate more smoothly.

Dependable Uniform Quality

Note the well-formed heads and clean, sharp threads on these bolts and screws. The nuts are uniformly well-made to give a smooth, even fit.

National PRODUCTS

THE NATIONAL SCREW & MFG. COMPANY, CLEVELAND 4, OHIO

THE STAMP OF QUALITY

Chas. A. Schieren Company

for Leather Belting, Packings, Specialties

LEATHER BELTING

Specially tanned to transmit more power—last longer. Available in all sizes to meet all regular and special requirements of service.

LEATHER PACKINGS

Precision built, for all types of services. Write for free copy of new book, "Design and Application of Mechanical Leather Packings".

LEATHER SPECIALTIES

New Patented check strap which outlasts ordinary checks 3 to 1. All types, straps, pickers, aprons, discs, clutches, etc.

Write for complete information or price quotations on any of the above products.

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Tanners and Manufacturers Since 1868

SC-21

The $20,000,000 Challenge

(*Continued from page 94*)

textiles, he points out, lead to the conclusion that carelessness by some shipper's employee might, too, have caused the trouble. Greater education by the shipper management, as well as by carrier management, is necessary, he declares, to reach those employees actually handling the freight and impressing upon them the preventive measures that should be carefully observed.

To inform customers how truck operators can do a better job in serving them, ATA's freight claim section has issued a 12-page pamphlet bearing the title "Information For Our Customers," and the provocative subtitle "*You* can help reduce claims. *You* can help expedite claim payments." Interested persons can obtain copies from the carrier they patronize.

Outlined in the text are suggestions for control of practices by shippers which, from the experiences of the truckers, lead to claims. Points covered include such matters as design of a package that will protect goods in transit; use of good quality glue, tape, fasteners, strapping, etc., that will insure against the package coming open in transit; obliteration of all marks from the container other than those identifying shipper and consignee and numbers to connect the consignment with the billing; how to apply labels that will stay on; how to protect merchandise from pilferage; how to prepare legible bills of lading with all necessary details; and the importance of checking the routing "to be certain that one exists and that the carrier to whom you are tendering the shipment serves the point or has an established connection that does."

Detailed procedure for correct presentation of freight claims is provided for the shipper's guidance and attention is given to regulations governing inspection of freight before or after delivery for adjustment of claims. And the pamphlet emphasizes "Remember—that Section 1(b) of Rule 5 of the National Motor Freight Classification authorizes the carrier to refuse to handle any article not in such condition or so prepared for shipment as to render transportation thereof reasonably safe and practical."

A Mutual Interest

Shippers have as great an interest in claim prevention as do the carriers, Secretary Miller asserts.

"It should be constantly borne in mind," he said, "that in the long run, it is the shipper who pays the carrier's loss and damage bill—that is one of the theories upon which rates are made. From a profit-making viewpoint, therefore, it is certainly to the interest of the shipper to do everything possible to prepare his shipment so that it will withstand the ordinary hazards of transportation.

"Business today is becoming more competitive. Salesmen are doing the entertaining, instead of being entertained. In this connection it should be remembered that the container is the first thing the customer sees. If the container is inadequate—of inferior quality or second-hand—the customer will be prejudiced against the merchandise even before he sees it. Good sales psychology calls for use of an attractive container and, most important, a container designed to perform its job of protecting the goods during transportation. Shippers should remember that carriers ordinarily are not liable for damage

(*Please turn to page 336*)

YOURS for the asking

... this comprehensive report of Automotive Replacement Parts and their 1948 Prices.

We present to the industry an analysis of present day interchangeability and questionable prices. Our investigation and research produced startling discoveries!

It's a 20 page book grouping facts, figures and buying information that will help YOU increase your profits in the future!

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TO AID YOUR 1948 PLANNING USE THIS VALUABLE BOOK

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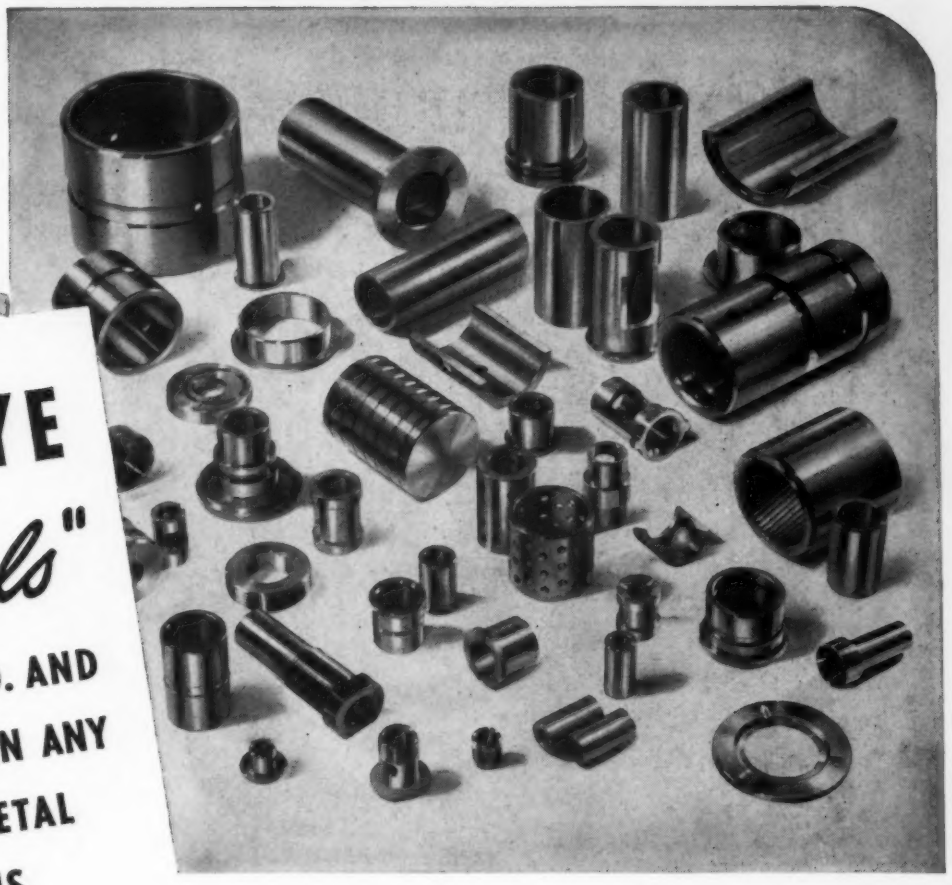

BUCKEYE "Specials"

IN ANY I.D., O.D. AND LENGTH...AND IN ANY DESIRED METAL ANALYSIS

Slotted, Split, Drilled or Flanged Exactly to Your Blue-Print Requirement

● Our 1088 sizes of ready-to-use stock bearings are the time-proved answer to most industrial bearing needs. For others, these "specials"—conforming exactly to customers' blue-print—find wide use on machines and machinery of all kinds. Manufactured from selected materials under our exacting controls, each is a quality product,—free from porosity and accurately dimensioned within the required limits, assuring speedy, easy assembly, and a maximum of long, efficient, satisfactory service. Let us quote on your "special to blue-print" requirements.

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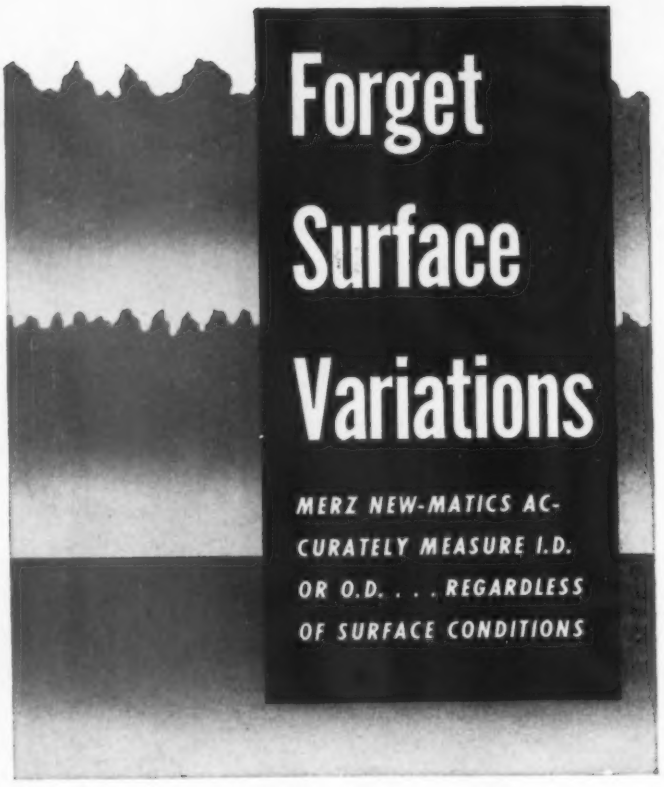
BRONZE SLEEVE BEARINGS STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT IN ANY RECOGNIZED BEARING METAL ANALYSIS



● Only MERZ *New-Matic* Measuring Machines enable you to obtain identical I.D. or O.D. readings—*every time*—on parts of like diameter . . . *regardless of surface variations.* In MERZ *New-Matics,* a synthetic ruby button contacts only the highest surface points. Unlike conventional gages—where compressed air directly touches *all* surfaces, high and low alike—MERZ *New-Matics* are unaffected by any surface variations.

For the same reason, MERZ *New-Matics* are the only air-actuated units capable of accurately gaging parts in which perforations or keyways have been machined. MERZ *New-Matic* Measuring Machines also permit accurate gaging to the extreme edges.

For full details on these and many other advantages of MERZ inspection equipment, write for free 20-page book which illustrates and explains the *New-Matic* principle of measuring and sorting.

MERZ ENGINEERING COMPANY · INDIANAPOLIS 7, IND.

MERZ

MERZ "Master" *New-Matic* Measuring Machine. Other models for every inspection purpose.

The $20,000,000 Challenge

(*Continued from page 334*)

due to improper packing and that, therefore, it is the shipper's duty to use sufficient interior packing to prevent damage.

"Our ATA national and state program to stimulate freight claim prevention activities has made rapid strides. But this fifth column of freight claims has not been completely licked by any means. To meet and vanquish the enemy of efficient transportation, there must be a firm resolve on the part of all—shipper—carrier — consignee — to accentuate freight claim prevention at all times."

* * *

These Changing Times

(*Continued from page 89*)

ness, and we ask ourselves: Should we look at these new approaches with just a little critical wonder? What are our obligations to those who helped us out when times were tough?

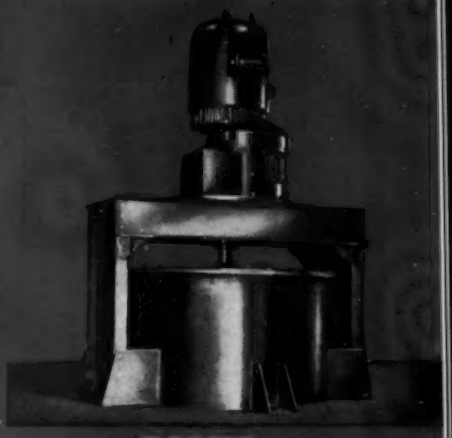
Yes, times are changing fast in procurement, and it makes you wonder what the next few months and years will bring. Should inventories be kept high? Will there be a big drop in prices? Should we buy for the future — six months — three month — hand to mouth? Shall we believe that "It can't happen again", or will we all be back in the same boat? World conditions are not smoothing out as we would like to see them. National and international politics are playing a big part in the situation.

Never has the purchasing agent had more problems to worry him. But worry will not provide the answers. Nor will black lists and white lists, or opportunism, or reliance on policies that were based on wholly different conditions. The purchasing agent today must keep his finger on the pulse of business conditions. The nature of his job puts him in a very advantageous position to do this. Even more, the combined judgment and experiencec of 11,000 purchasing agents in every line of business and in every part of the country, provides a sound, reliable guide. That judgment and experience is available to him through membership in the National Association of Purchasing Agents. It is a "must" item to every purchasing man in these changing times.

There is one best way to secure the slower speeds you need for most of your motor driven machinery . . . Use Master Gearmotors . . . the horsesense way to apply horsepower.

By using them you get the RIGHT horsepower, the RIGHT shaft speed in a single unit that fits in RIGHT where you need it.

Don't put up with make-shift assemblies for your power drives. The integral construction of both motor and speed reducer into one compact unit, permits many parts to be stripped away from both the power drive and the completed machine, and pays off handsomely in savings in material . . . savings in space. In big sizes or small sizes, you'll find them easy to order, easy to use . . . a great help in securing compact, economical designs for your equipment.



the **RIGHT** horsepower
100 horsepower and smaller sizes

the **RIGHT** shaft speed
Gear reduction ratios up to 432 to 1

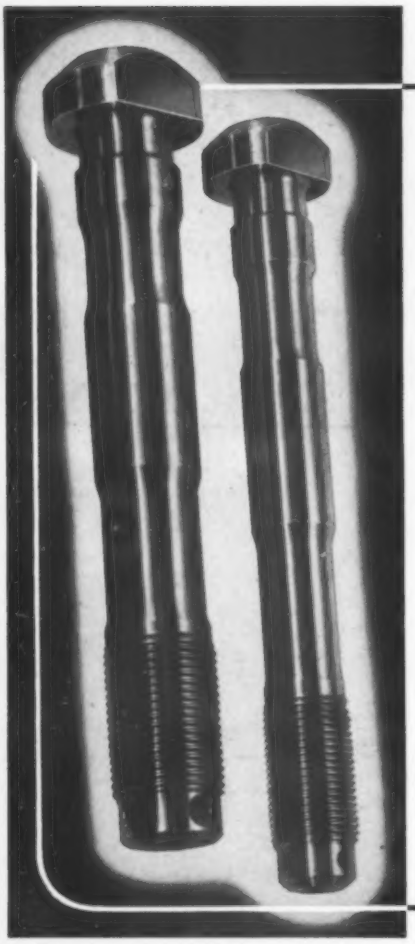
the horsesense way to use horsepower

And nowhere, except in the Master line of Gearmotors, will you find power units that are so flexible, so easily adaptable, and in such a wide range of sizes and types. They are available in any size, 100 HP and smaller . . . and for all cycles, phases and frequencies . . . in open, splash proof, totally enclosed, fan cooled and explosion proof types . . . with Speedrangers (mechanical variable speed) and Unibrakes . . . for every type mounting . . . and over a gear reduction range up to 432 to 1.

Increase the salability of your motor driven products . . . improve the economy, safety and productivity of your plant equipment . . . with Master Gearmotors, the horsesense way to use horsepower.

THE MASTER ELECTRIC COMPANY
DAYTON 1, OHIO

and **RIGHT** where you want it



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SPECIAL FASTENERS

RITCO Special Fasteners, built for heavy duty service, are uniform in strength, accurate to blueprint and highly finished. Threads are precision cut or rolled, surfaces turned or ground, free of tool marks. RITCO Fasteners contribute to the dependability of many well known products. Available up to 2" diam. in any metal.

Remember RITCO for
Special Bolts, Nuts and Studs • Alloy Steel Studs • Milled Body Bolts • Drop Forging Heat Treating

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SERVING AMERICAN INDUSTRY SINCE 1834

We want you to see "PREMIER-TONE"* for yourself!

You can appreciate this new Premier finish only by *seeing* it, *touching* it! That's why we'd like to send you an actual sample — solid proof of its eye-appeal and sales potentials. We want you to judge its quality and beauty — to see for yourself how "Premier-tone" can improve your product's appearance.

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★ A distinctive hammered finish offering unusual beauty for nameplates, dials and panels.

PREMIER METAL ETCHING COMPANY
Quality Products Since 1910
21-09 44TH AVENUE, LONG ISLAND CITY 1, N.Y.

Coal Selection Based On Facts

(*Continued from page* 106)

able things, namely (1) the finding of a better coal or, (2) verification that the coal in use is the best obtainable value in the entire market.

Better Buying in a Tight Market

The smaller number of coals a plant knows to be suitable to its use, the tighter any market is. Production may be up, exports and domestic consumption down, and an actual surplus existing, but the market will still be comparatively tight for the plant that knows only a few coals, compared to the hundreds that are available to it.

On the other hand, the plant with complete knowledge of *all* the coals available to it, with their relative advantages and disadvantages a matter of record, has the facilities for assuring ample tonnage at lowest possible costs, in all markets, when coal is being produced.

While Lewis and the producers toss the ball back and forth, and Lewis has the Government to call fouls, and the score is forever against the user, his best interests are in knowing all he can, about all the coals possible in his use. Old mines drop in quality and tonnage all the while. New mines come into production constantly. And in that flux, coal markets are tight or tighter, in proportion as information is complete or partial. Within the total tonnage produced, a tight market is a matter of organized knowledge, skillfully used.

Application of New Method

By "new" method is here meant new *in acceptance*, because it is not new in coal application, nor to consultants, who have used the principles involved for years.

It is now proposed that a voluntary, non-profit, central bureau be created, for collection and collation of coal use facts. It should be impartial, unbiased, competent. It would serve only participating members, but it would relieve them of the unquestionably heavy detail that comparing plant requirements with proved coal performance data requires.

The first effect of such a bureau would be to discontinue duplication of so-called "trials", and make it possible to accumulate the collective effort of all users, to their total benefit. Costs could thereby be kept down to where no plant, regardless of size, could afford to do without

them, and the volume of information would assure complete facts being applied to all cases.

Such a plan would fit into 4-stage buying procedure as follows:

1. *Directory*—The consideration of *all* available coals instead of the few that can be presently tried.

2. *Inquiry*—Offers would be analyzed, but the greatest good would come from values indicated periodically, with their advantages over current supplies.

3. *Selection*—Complete facts and information would be supplied, but final decisions would always be with the member.

4. *Confirmation*—This would be by actual use, confined to the selected few, and with data for correct use. Like Step 1, it would cover ALL COALS, and not just a few as at present.

Thus the small plant could have the benefit of skill and experience that is not available to it now because of the smaller tonnage involved. Both large and small plants would benefit from the data submitted by each other. Even plants that now sample and analyze regularly, would not only have the benefit of additional data, but could also, at much lower cost than presently, check their own findings with those of other component sources unidentified.

Evidence of interest in such a development, by way of criticism and comment, would be helpful in initiating what could easily be a revolution in coal buying methods. It could be the origin of new money savings, from eliminating hidden losses that are due to outmoded methods. Buyers and engineers would find in the application of this new technique, a new way in which to increase their values to their employers and themselves.

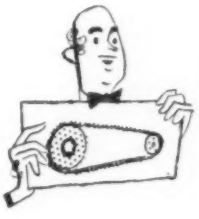
WHAT SURPLUS HAS
YOUR COMPANY TO OFFER
THAT OTHER P.A.'S
WOULD BE INTERESTED
IN BUYING?
WHY NOT DISPOSE
OF IT NOW THROUGH
PURCHASING'S
CLASSIFIED SECTION
SEE PAGE 358

Foreman: "Ferdinand's tickled pink since we switched from the old set-up wheels to these *Armour Abrasive Belts!*"

3 REASONS WHY ARMOUR BACKSTAND BELTS ARE BETTER!

1. Sharper Coating!

Ferdinand: "Take it from me—I've worked with both the old set-up wheels and these Armour Coated Abrasive backstand belts. And since we converted our bench grinders into belt grinders by using backstand units—we've had sharper, tougher, smoother cutting action. That's because factory-coated belts have uniform grain distribution. It was the inaccurate, uneven coating of the set-up wheel which slowed down cutting action."



2. Cooler Cutting!!

Foreman: "Right, Ferdy! We know, too, that belts afford greatly increased production because their cutting surface is greater. The point of contact on the belt gets a chance to cool as it passes around the idler. Results—cooler cutting, longer abrasive life, less tendency to burn work."

3. Greater Contact Area!!!

Ferdinand: "And with the resilient contact wheel you get a cushioned grind and greatly increased contact area. This cushioned grind gives us smoother, cleaner finishes—in less time, at lower costs—even on those surfaces that are hardest to reach. To us operators that means less fatigue—and my friend, the Foreman, knows that it also means more speed and greater production."

ARMOUR and Company

Coated Abrasives Division

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The Caster with a Stubborn Streak

Like a spoiled brat, it balks and drags—
refusing to be led, pushed or pulled.
You go one way, it goes the other.
And when you force the issue with brute
strength, it shrieks to high heaven.

THE CASTER* THAT IS

well-behaved

CUTS HANDLING TIME

EVERY Bond caster is designed to meet a specific operating condition. This Bond all-steel caster is made to stand up under severe treatment. Double ball races provide easy swivelling . . . smooth steering on the turns. It's pressure lubricated.

Get the caster that's exactly right for each operation. Get the free Bond catalog K-36. Sent on request.

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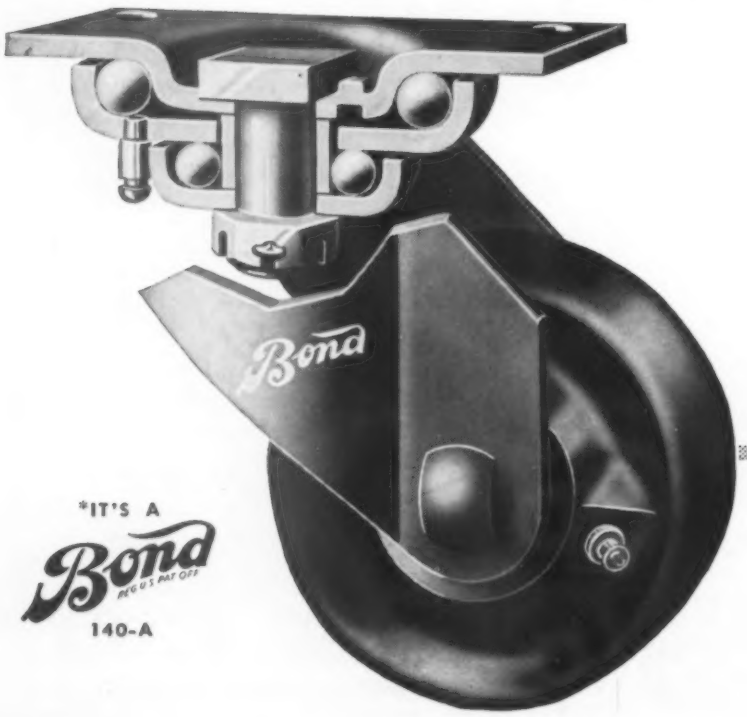
MANHEIM • PENNSYLVANIA



*IT'S A Bond REG U.S. PAT OFF. 140-A

The Purchase Order

(*Continued from page* 130)

The order is a contract, and points which may arise later to cause discussion and differences should be clearly defined and noted on the order, so that both parties are aware of the conditions. Price, terms, and f.o.b. point should always be on the order, and also the method of shipment. An order promise may not be kept, or a slower method of shipment made when a faster one would have saved the day. It will save argument if the purchaser definitely states how the material should be shipped. The same is true of the f.o.b. point. Freight sometimes amounts to quite a bit of money, and after the shipment is made, misunderstanding may arise as to payment.

Price is important. Approving prices after invoices are issued is not the best method. The price should be determined before the order is issued, and should be shown on the order. This fosters better relationship between the contracting parties, avoids later discussion, and attaches respect to the purchaser's methods of doing business.

After an order is entered and accepted by the supplier, it is at times necessary to make changes on the specifications, price, terms, method of shipment, or other details, because of changed conditions. Such changes must be made with both parties' consent, but word of mouth should never suffice. The order, as a contract, was written to begin with, and any changes made should be covvered in writing, with a change of order issued showing that change. This is only good business, and keeps the contract mutually definite. The change of order should also be very simple and show on it only the change which is being made in the order.

Sufficient copies of every order should be made to keep all the parties who must handle the material completely informed. This number may vary depending on the various types of business and their need for copies. The purchasing department should keep a copy, give one to the receiving department to check quantity, one to the inspection department to check quality, one to the planning department to arrange production, one to the stores department to carry and allot, one to the accounting or cost department for approving invoices—unless this is done by the purchasing department—and always one to the person or department requesting the material, as evidence of

(*Please turn to page* 342)

New 2½" to 4" GEARED PIPE THREADER

that's a cinch to work with RIDGID No. 4P

Loop handles make it easy to pick up

easy to carry

easy to put on pipe

● You can't make a big die stock like this out of marshmallow just to keep it light weight. This new RIDGID 4P is husky all steel-and-malleable but those sensible balanced loop handles enable you to use it without breaking your back; even when it's greasy and you're tired, you swing it into action easily, smartly — straight on the pipe, no struggle, no slipping or tipping.

Quick-Setting Workholder

Mistake-proof plate type, sets to size *before* you put it on pipe. One screw to tighten, no bushings to bother with.

Less-Effort Pipe Threading

Smooth accurate threads easily cut with 4 sets of 5 dies, standard or tapered, drip threads, short nipples. Ratchet handle equipped, RIDGID power universal drive shaft available.

Almost No Upkeep

Twin-anchored pinion turns in oilless bronze bearing — never needs oil. Grease packed gear fully enclosed, safe for you, safe from dirt and wear.

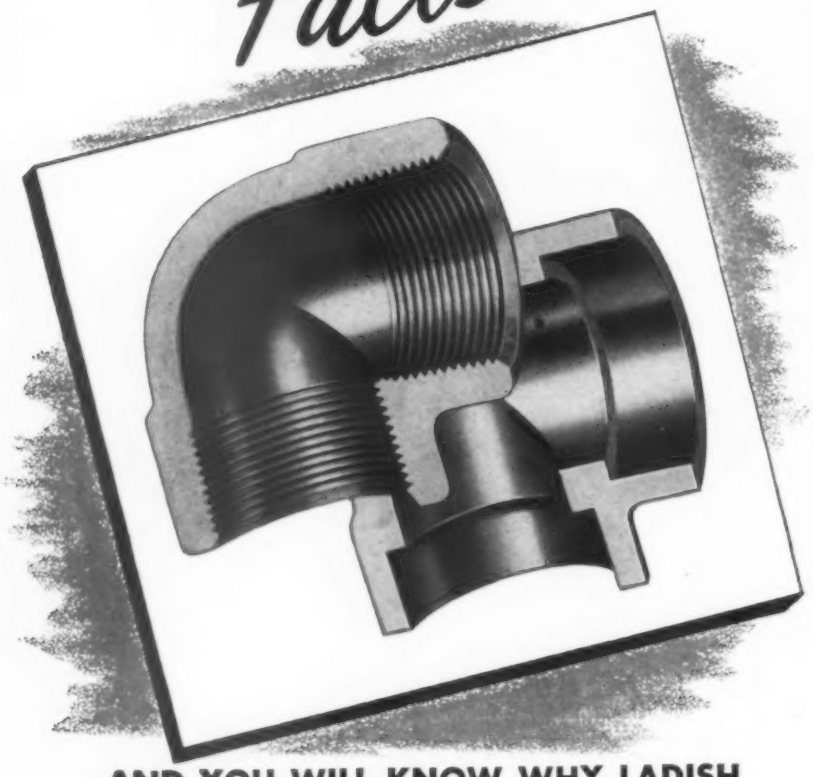
To save yourself work and muscle-fag and get perfect 2½" to 4" threads, order the efficient new 4P — at your Supply House.

RIDGID WORK-SAVER PIPE TOOLS

THE RIDGE TOOL COMPANY • ELYRIA, OHIO

GET ALL THE

Metallurgical Facts...



AND YOU WILL KNOW WHY LADISH

Controlled Quality

FORGED STEEL FITTINGS STAY IN SERVICE LONGER

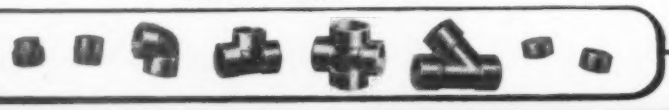
Fact Rigid laboratory control of forging processes increases strength and toughness.

Fact Controlled grain flow provides maximum resistance to shock, strain and stress.

Fact Dense, homogeneous metal structure retards action of erosion and corrosion.

Ample Stocks... Prompt Service... Carbon, Stainless and Alloy Steels ⅛ through 4 inches, 2000 through 6000 pounds.

Write for Catalog, Vol. 2, Today



LADISH CO.

CUDAHY, WISCONSIN (MILWAUKEE SUBURB)

District Offices: NEW YORK • BUFFALO • PITTSBURGH • CHICAGO • PHILADELPHIA CLEVELAND • ST. LOUIS • HOUSTON • NEW ORLEANS • LOS ANGELES

STOCKED AND SOLD BY LADISH DISTRIBUTORS IN PRINCIPAL CENTERS

The Purchase Order

(*Continued from page* 340)

how the need has been provided for. These departments need not all file their purchase order copies, but the copies will give them information which aids cooperation between all departments.

The request for material, of which there are any number of forms in use, should also be very simple, since it serves the same purpose for the department head as does the purchase order for the purchasing office. Preferably, it should also be of letter size ,show the date, material purpose, estimated delivery, quantity on hand, and description of the item or items.

Requests should be signed by the department head to be considered valid, and should be the only means of ordering by members of the firm through the purchasing department. Verbal orders or requests are never sure enough, and, like other things that are not put in written form, are apt to cause misunderstanding. Having a written request for everything desired by departments of the firm is not a pompous ritual—it is only good business and common sense. It causes the least errors, and makes a surety of items needed by all departments so that nothing is overlooked and found wanting at the last minute when production is to start. Even in the small business, this same system should be followed.

The purchase order is the result of all the time spent in procuring a needed material for sale. It is simple. Only the result of all the previous work is shown there.

* * *

Soap and Glycerine Industry

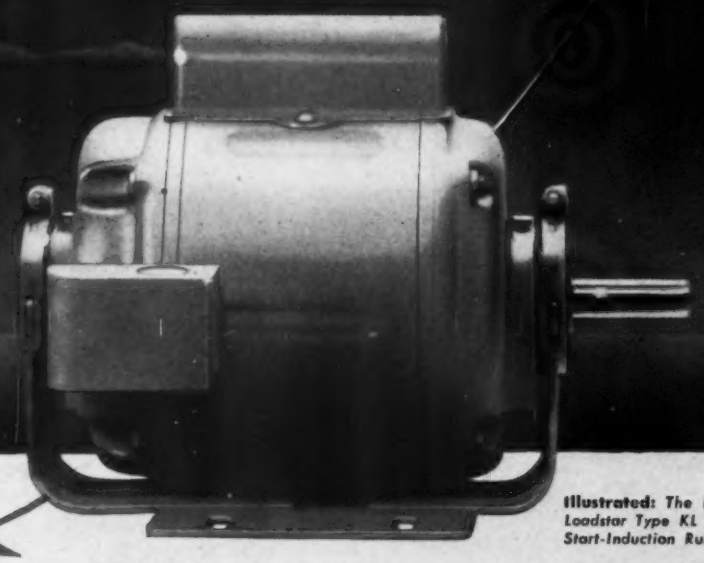
(*Continued from page* 139)

dustry as a whole in a big way. They, as are several other companies, are studying ways and means to do this, and they look upon our Purchase Information Bureau as a chance through which they can do what has heretofore been impossible. They, too, have to work out plans to meet this opportunity, but they are at work, and we can reasonably expect word soon concerning what can be done.

"The word *purchase* is sometimes used as synonymous with *price* alone. Actually it covers economical procurement, i.e., (a) quality, according to required use, (b) good service in

(*Please turn to page* 344)

Set your Sales by the Leland LOADSTAR



Illustrated: *The Leland Loadstar Type KL Capacitor Start-Induction Run Motor*

COOL-RUNNING! *Internal fan air-cooling, and newly developed ventilation features.*

QUIET! *Exceptionally close tolerances eliminate vibration, prolong motor life. Engineered throughout for smooth, silent operation under most exacting conditions.*

SELECTION! *1/6 to 3 HP. Types—ball bearing and sleeve bearing; open and enclosed; horizontal and vertical. Thermomatic control optional. Special-purpose motors built to specifications.*

LOADSTAR-POWERED, your product will encounter smoother sailing at the point of sale. However high your production and performance standards—you'll find the self-same qualities in Leland Loadstars. Thus, the Leland nameplate—on hushed, sweet-running, cooler motors—becomes an important factor in the service of your product and in the satisfaction it is built to render. Specify Leland Loadstars for HP per cubic inch as high as any —for HP per pound higher than most. Write for complete descriptive folder.

THE LELAND ELECTRIC COMPANY, DAYTON 1, OHIO. ***Branches in all principal cities.***

LELAND LOADSTAR MOTORS

MOTORS OF ALL TYPES—ENGINEERED TO INDUSTRY'S SPECIFIC NEEDS

more than
80
Oakite
Materials
to solve
your cleaning
problems

IT'S SOUND SKEPTICISM to investigate the kind of service behind the cleaning compounds you're going to standardize on. So if you are concerned with the service angle — planning the purchase of cleaning compounds to strip paint, descale, degrease decarbonize; to prepare surfaces for painting or plating — here's what Oakite offers:

- The free, personal help of over 160 trained technical service men.
- Selection of over 80 cleaning materials, comprising alkaline, solvent, acid types.
- Handy warehouse stocks for prompt delivery.
- Free technical bulletins, digests, booklets.

Better call Oakite for better cleaning. The address is Oakite Products, Inc., 54 Thames St., New York 6, N. Y.

OAKITE
REG. U. S. PAT. OFF.
MATERIALS
METHODS
SERVICE

Specialized Industrial Cleaning

Technical Service Representatives in Principal Cities of U. S. & Canada

PICK THIS BLADE to Saw Tough Alloys

For cleaner, more accurate power machine cutting of hardest alloy steels — stainless, chrome, nickel, etc. — the Griffin High Speed Steel Blade is your best buy. 18-4-1 tungsten high speed steel, specially Griffin-tempered, with specially milled teeth. Made also in hand frame sizes.

OTHER GRIFFIN BEST BUYS

For most economical general power machine use, pick the GRIFFIN SPECIAL ALLOY molybdenum high speed steel blade . . . For utmost flexibility plus toughness in a hand frame blade pick the improved NEW GRIFFIN . . . For hand sawing thinnest sheet or tubing without tooth breakage, pick the GRIFFIN NON-STRIP . . . For precision contour sawing pick GRIFFIN BAND SAWS; hard-edge-flexible-back, spring-temper, skip-tooth and wood-cutting types.

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GENERAL SALES AGENT
Dept. C, 105 Duane St., New York 8, N. Y.

ASK YOUR DISTRIBUTOR FOR

GRIFFIN
HACK SAW BLADES AND BAND SAWS

MADE BY G. W. GRIFFIN CO., FRANKLIN, N. H.
Hack and Coping Saw Blade Specialists Since 1880

Soap and Glycerine Industry

(*Continued from page* 342)

production and delivery, (c) constant and intense interest and study of the customer's needs, (d) price, and (e) the intangibles which go to make up a valuable purchase and sales relationship, and to make it in fact a long-range service to increase purchase dollar value.

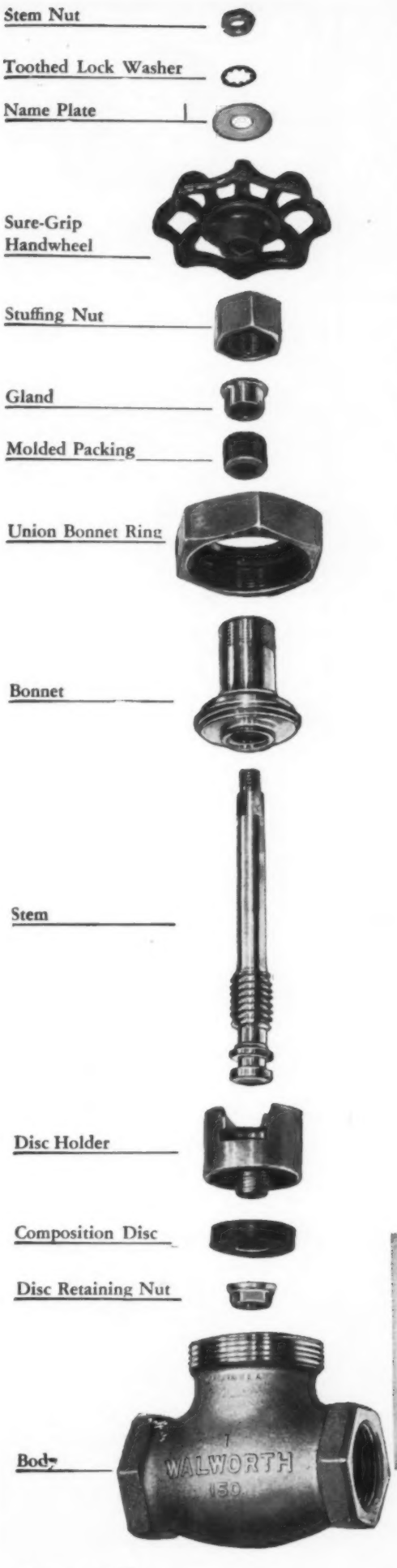
"All this for the good of our members, and not price alone, is now being studied carefully by many vendors. Some will give us a better price. Others, who because of company policies or legal restrictions cannot give a better price, should be able to give us value in other tangible ways. Many have nation-wide distribution agencies, and we are trying to develop that phase so that our members may be better served as a whole. Also we want to develop any good local sources of supply from which our members as a whole may benefit. In all of this we want to work with small business concerns as well as large.

"Many of our members have well organized and long established purchasing departments, and some of them have already offered the assistance of their specialists in studies of specifications, laboratory tests, adaptation of standards, etc., which will help our industry as a whole to effect economies. Perhaps some of our smaller members can make a comparable contribution in these matters by their cooperation.

"Vendors are more and more alive to the opportunity we offer for a nation-wide market in many items, at lower sales costs. Though we have been at work only a short while, three of them are now making plans to give us definite offers in these respects, which in the end will spell a money value to us all. Beginning negotiations on December 29th, we have completed in whole or in part, and are working on, such items as drums, valves and fittings, general mill supplies, tires, office supplies, materials handling equipment, paper towels and toilet tissues, office furniture, rubber goods, containers, pumps, lubricants, packing, and others. The list is growing daily, and negotiations are mounting in number. On January 22nd we sent to all our members a partial list of commodities, asking for a report on items of most importance and some idea as to volume. Replies are already coming in, and are of great help to us in handling our over-all needs.

"While this project is an over-all

(*Please turn to page* 346)



TO MAKE A GOOD VALVE BETTER

Walworth has redesigned and improved its No. 95 Quality Bronze Globe Valve.

150 pounds working steam pressure at 500F

300 pounds cold water, oil, or gas.

Can be repacked under pressure when fully opened.

The Walworth No. 95 Bronze Globe Valve has always been tops with piping men because they liked these features: Renewable composition disc; lock-on, slip-off disc holder; union bonnet construction; deep stuffing box; tough bronze body made of Composition M (ASTM B61).

Now Walworth has added these improvements: (1) New cylindrical disc holder that accurately guides the disc to the seat, regardless of the position in which you install the valve. (2) Newly designed, air-cooled, sure-grip handwheel that you can grab and turn, even when wearing greasy work gloves. It has a tapered square hole sized to gage to fit snugly on the finished square of the stem. (3) Toothed lock-washer to prevent the stem nut from becoming loose. (4) All parts have been redesigned to give maximum service and strength.

Walworth Quality Bronze Valves are available in Globe (No. 95), Angle (No. 96), or Check (No. 97) types and in sizes from ¼ to 3 inches (check valves ¼ to 2 inches). Ask your Walworth distributor to show you the improved Walworth No. 95 Bronze Valve, or write for further details.

WALWORTH

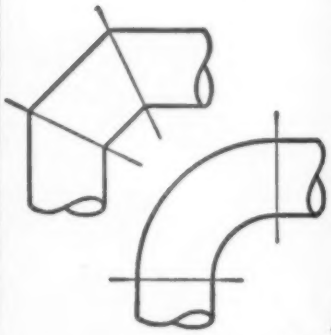
valves and fittings

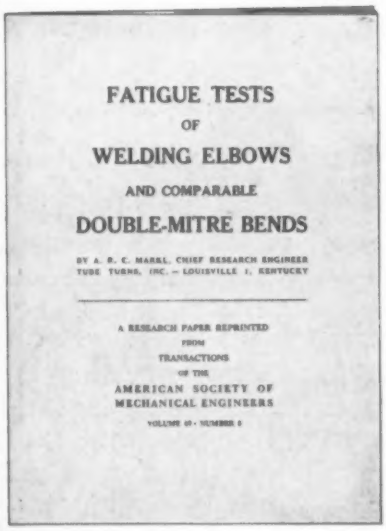
60 EAST 42nd ST., NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

WHICH?

and Why





GET THIS BOOK

Fatigue Tests of Welding Elbows and Comparable Double-Mitre Bends: This research paper gives the authoritative pro-and-con. Analyzes effects of bending in the plane and transverse to the plane of curvature, and bending with and without internal pressure. Mail the coupon.

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Please send "Fatigue Tests" booklet.

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Firm Name.....

Street.....

City.....*Zone*....*State*.....

Soap and Glycerine Industry

(*Continued from page* 344)

membership effort, I have no thought of prying into any of your private purchasing conditions—I have been a purchasing agent too long for that. Our arrangements will always be open for change and improvement. Especially in these times of slow delivery, it will help if you will anticipate your requirements as much as possible without inflating inventories. Many items now are in the hard-to-get category, but we are laying foundations so that ultimately we will be in a position to obtain the last word in value.

"Because I know of the large slice of the business dollar which goes into goods purchased, and because I know of the contribution which good purchasing can and does make to business, I am glad of this chance to help work out this procurement plan for and with you. It is a challenge which our united effort will meet."

* * *

Export Controls Extended in 1948

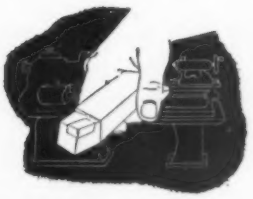
(*Continued from page* 129)

comparable applications to those which provide for the lowest prices, or, in exceptional circumstances, by fixing reasonable mark-ups in export prices over domestic prices."

Under "normal" conditions of trade, i.e., in the absence of governmental controls, manufacturing exporters, merchant exporters, small business, and newcomers have all shared in the export trade to the best of their competitive abilities. In the past, when goods were freely available ,such competition has been largely on the basis of prices. In recent years, the emphasis has been much more on the ability of the exporter to obtain goods from suppliers. In many cases since the end of the war, the prices charged foreign purchasers for controlled commodities has been several times the prevailing price range in the domestic market. The result has been increased inflationary pressure on the domestic economy and a sharp reduction in the buying power of dollar exchange available for foreign countries.

Under the new policy, the Office of International Trade will generally approve those export shipments

(*Please turn to page* 348)



KENNAMETAL

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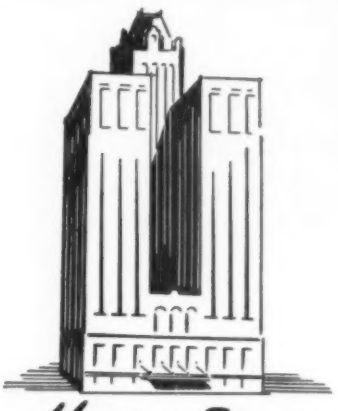
TOOLS, BLANKS, and SPECIALTIES

- **FOR FAST, ACCURATE METAL-CUTTING . . .** complete selection of single-point tools and milling cutters.
- **RESIDENT TOOL ENGINEERS** in 24 cities available for expert help in proper selection and correct use.
- **WAREHOUSES** in Chicago, Cincinnati, Los Angeles, New York, and San Francisco to expedite delivery.

KENNAMETAL

SUPERIOR CEMENTED CARBIDES

KENNAMETAL Inc., LATROBE, PA.



Host to Most

WHO VISIT BALTIMORE

The largest and newest hotel in Baltimore — run the way you like it. This great hotel offers you 700 fine rooms, excellent restaurants and a pleasant Cocktail Lounge.

Rates are reasonable.

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LORD BALTIMORE

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QUALITY... to meet your specifications

HERBRAND PRECISION FORGINGS

Upset forgings . . . drop forgings . . . in any size or shape up to 200 lbs. . . . bearing the Herbrand "Diamond H" trade mark will fulfill every requirement of your products.

Strict adherence to specifications and contour effects a real economy in Herbrand Forgings by reducing machining and finishing operations to a minimum. And there's inbuilt stamina in every one, the result of scientific heat treating in the latest automatic electrically controlled furnaces.

Whatever your requirements in forgings, in orders of thousands or millions, Herbrand is your most faithful source of supply . . . as it has been for hundreds of industries since 1881. Your inquiries are solicited.

SINCE 1881

Herbrand

SUPER-QUALITY DROP FORGINGS

..the finest money can buy!

HERBRAND DIVISION

THE BINGHAM-HERBRAND CORP., FREMONT, OHIO

Export Controls Extended in 1948

(*Continued from page* 346)

which the Office and the importing government find make the least demand upon the latter's supply of dollar exchange. It should be emphasized that price is not the sole criterion for approving licenses. The OIT will, under certain conditions, consider the recommendations of the importing government as to the import contracts which it wishes to see fulfilled. While such recommendations are greatly intended to minimize the cost of imports, other factors will require consideration and the recommendations of the foreign government concerned are purely advisory. For many commodities, the end-use and the destination of shipments will continue to be the principle criteria in the granting of licenses.

Successful administration of the new policies depends largely upon the combined efforts of government and the export community. It has always been the basic policy of the Office of International Trade to reduce the burden of controls to the minimum compatible with the requirements of governmental objectives set forth by the Congress and the executive branch. Compliance with the mandate of Congress and the fulfillment of our foreign policy now call for a broader control than we have had during the past year. The active cooperation and assistance of the export community will help immeasureably to make these policies effective.

* * *

National Academy for Public Purchasing

(*Continued from page* 127)

improvement in the procurement system, however small, results in sizable savings."

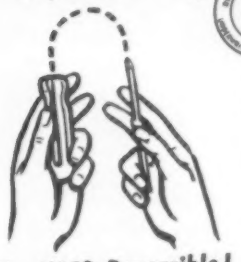
Mr. Mack said that it is expected that the initial sessions will uncover "purchase techniques and practices now employed in localized areas which may well be fitted into a larger, national plan."

He also stressed the importance of industry's participation. "American industry produces the things government purchasing officers buy. Its operations have always been the hallmark of efficiency. In addition, its own purchasing systems work very well, and many of the purchasing practices can become parts of the governmental procurement technique, despite the fact that the latter in many cases operates under limiting statutes and directives."

The original idea for the National Academy came from a suggestion lodged last year by W. Z. Betts, one of the new appointees, as President of the National Institute of Governmental Purchasing.

Formal announcement of the preparation of plans for the establishment of the National Academy for Public Purchasing, was made by Mr. Mack last fall at the annual conference of the N.I.G.P. in New York City. President Truman, in a message of greeting to the Conference, made especial reference to the Academy, saying: "I note with pleasure your desire to improve the standards and practices of public purchasing through such means as the establishment of the National Academy for Public Purchasing under the sponsorship of the Bureau of Federal Supply of the Treasury Department. Federal purchasing officials as well as those who buy for state and local governments, should benefit from this mutual exchange of experience in buying techniques."

ALERT MANAGEMENT
Specifies VACO S/B (Slo-Burning) Drivers



The VACO Reversible!

It's new! Pull out the blade, turn it around, and you have a Phillips instead of a regular driver. Only electrically heat treated chrome vanadium bits are used in Vaco screw drivers.

Now Vaco offers you the new Amberyl Slo-Burning handle embossed with the Underwriters' Laboratories, Inc., Reexamination Service Marker. Ends forever the extreme fire hazard of old style nitro-cellulose handles! It will pay you to investigate this latest improvement in the full Vaco line of shock and break proof screw and nut drivers. Write for full information.

173 TYPES AND SIZES

VACO PRODUCTS CO.

317 E. ONTARIO ST., CHICAGO, ILLINOIS

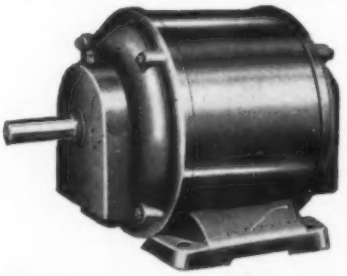
Make Friends with a VACO!

½ SIZE

People can't resist the appeal of this useful little tool. It's an ideal give-away . . . inexpensive in promotion or premium lot quantities. Your name imprinted in gold, silver or other color on Amberyl handles.

This **MOTOR** *comes from a large Family!*

VALLEY Ball Bearing Motors are built in sizes from ½ hp up to 75 hp, providing wide adaptability in power planning. VALLEY'S cool running splash proof, dust proof construction insures long hours of dependable power under the most hazardous conditions.



You'll find the type of Motor you need in your power planning when you investigate VALLEY MOTORS.

VALLEY
ELECTRIC CORPORATION
4221 FOREST PARK BLVD. • ST. LOUIS 8, MO.

There's more to UNION Containers Than meets the eye

THERE's more to judging a container than standard tests will show! You want proof of undeviating quality, of service you can rely upon month after month, of expert package-engineering, of a fair price policy.

All these you get in Union Corrugated Containers. Union containers are quality controlled from tree to finished box. Union owns and leases its own timberlands . . . operates the largest completely integrated Kraft pulp-to-container mill in the world . . . has four modern box plants strategically located for able service.

Union gives you, besides, all the packaging experience and the mass production economies developed in 75 years of leadership in paper packaging.

Yes, there are many values you should look for when you buy corrugated containers. You get them all when you buy boxes identified by the famous Union shield.

UNION Corrugated Containers

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UNION BAG & PAPER CORPORATION

Principal Offices in Woolworth Building, New York 7, N. Y.

Corrugated Container Plants:

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Seamless Steel Plate
Made High Pressure
CYLINDERS
Standard or Lightweight

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Seamless Steel Pipe
COUPLINGS
Made to A.P.I. Specifications

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Drop-Forged Steel
PIPE FLANGES
All sizes • All types

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FORGINGS
Made by the steam drop hammer method

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CO_2 LIQUEFIERS
Seamless Plate-Made

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Harrisburg makes its own steel thus assuring prompt delivery

HARRISBURG
STEEL CORPORATION
Established 1853
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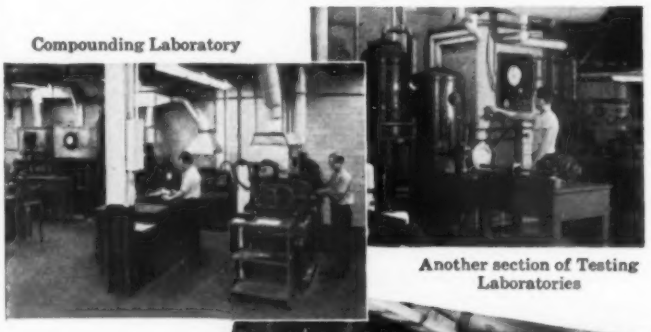
Testing Laboratories general view

Research

Starting in 1887 with the fundamental question—"what makes packing pack?"—Garlock has extended its research from year to year until the newly constructed building shown above is now required to house Garlock's research activities. Garlock products are developed, improved and refined in these completely modern chemical, physical and rubber-compounding laboratories; thoroughly tested in the fully equipped test department and processed in the pilot plant before ever reaching the production department. This *Quality Control* is your assurance of uniformly high quality in every product sold under the Garlock name.

THE GARLOCK PACKING CO., PALMYRA, N.Y.
In Canada: The Garlock Packing Company of Canada Ltd., Montreal, Que.

Compounding Laboratory



Another section of Testing Laboratories

Chemical Laboratory

GARLOCK

SAFE FLOORS

instead of

SLIPPERY FLOORS

when you SPRINKLE

QUIK-SIL *The Modern* OIL AND GREASE ABSORBENT

and

AQUA-LIC *The Modern* SOLUBLE OIL ABSORBENT

Now . . . you can make all type plant floors "bone dry" safe for workers when you apply dependable **QUIK-SIL** and **AQUA-LIC.** The former soaks up oil and grease and the latter soaks up water and soluble oils. The result is insurance protection against costly slipping accidents that rob you of production. Even protects against power trucking "skids". Lengthens belting life, and shoe soles and heels wear longer.

QUIK-SIL *Approved by Underwriters Laboratories Inc., sponsored by National Board of Fire Underwriters.*

FREE TEST SAMPLES

Prove the oil and grease drying action of **QUIK-SIL** and the water and soluble oil-drying action of **AQUA-LIC**—by actual test. With either or both products you'll note that floor surfaces are easier to clean. **Write Today!**

TROJAN PRODUCTS DEPARTMENT
The Diversey Corporation
53 W. Jackson Blvd., Dept. P-4, Chicago 4, Ill.

SYNTHETIC GASOLINE VITAL TO NATIONAL ECONOMY

The production of synthetic gasoline is vital to the continuance of the present national economy and present "way of living," in view of the vast increase in consumption of petroleum products, Howard Dimmig, Vice President of Hydrocarbon Research, 115 Broadway, told The American Society of Mechanical Engineers, Metropolitan Section, at a recent meeting in New York.

Describing the source of synthetic gasoline developed by Hydrocarbon Research in collaboration with some associated major oil companies, he said that two large plants, each with a capacity of 7500 barrels per day, are in process of construction and should be in operation early in 1949.

In these plants natural gas is decomposed into a mixture of carbon monoxide and hydrogen and the gas mixture is then reacted over a suitable catalyst to produce a mixture of 85-90% gasoline and 10-15% diesel oil.

"The gasoline is of superior quality—in fact better than the present market demands and better than that presently made by conventional oil refining processes. The diesel oil is also a superior product.

"The investment and operating cost are such as to make the process competitive with present crude oil refining products."

Overall energy production or consumption in the United States for the last 50 years shows an increase of about 50%, the speaker said. During the same period the production from coal has dropped about 10% while that from crude oil has more than trebled in volume. That from coal dropped from 90 to 50% of the total, while that from crude oil increased from 5 to 34% of the total.

In the so-called "motor age" more transportation both of materials and of people is being done in trucks, busses and pleasure cars. The daily consumption of petroleum products has gone from about 4.5 million barrels daily, before the war, to 5.5 at the present time, with a predicted 6 million barrels by 1951.

"Even though we have been lucky and assiduous in exploring and discovering new crude oil reserves, if the consumption keeps on at these rates, a reasonable prediction is that crude oil will be scarce in something like 10 years."

To help meet this vast increase in energy consumption, atomic energy may, by that time, be used for large scale power installations, but "it is difficult to visualize its use for trucks, busses and pleasure cars," he declared.

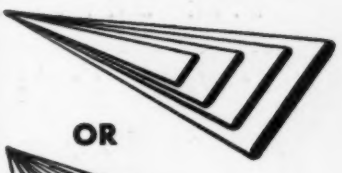
It therefore becomes vital to look for some other source of petroleum products "if we want to continue our present economy or way of living."

The production of the necessary carbon monoxide and hydrogen for synthetic gasoline from coal, while as feasible as the use of natural gas, is somewhat more expensive, Mr. Dimmig said. The estimated coal reserves are such that, with the present rate of use of coal for other purposes, the present demand of petroleum could be made from coal and the coal would still last 3000 years.

PAGE *Stainless Steel* WIRE

ROUND

FLAT



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Reliable springs range from the tiniest, most sensitive type for finely balanced precision mechanisms, up to much heavier springs for countless uses. We are accustomed to close tolerances, accurate end treatments and finishing, and all the other exacting requirements of fine spring making. Fussy and tricky shapes are a steady diet with us. We have special automatic equipment which cuts down operations and thus costs, with more uniform results. We maintain a large stock of multi-purpose jigs and dies which often eliminate tool costs.

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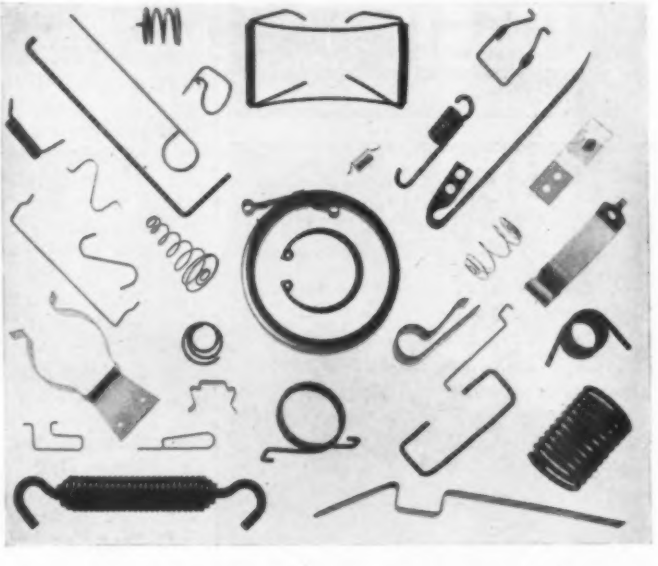

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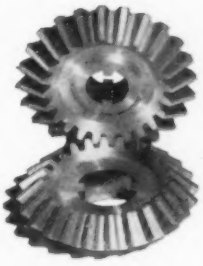

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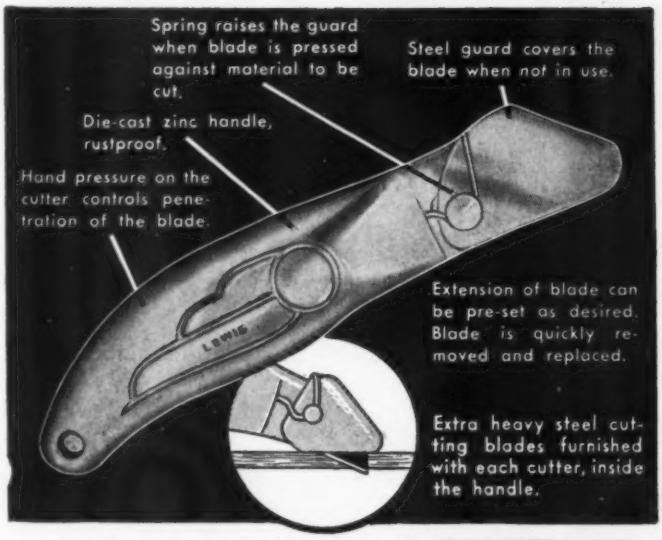
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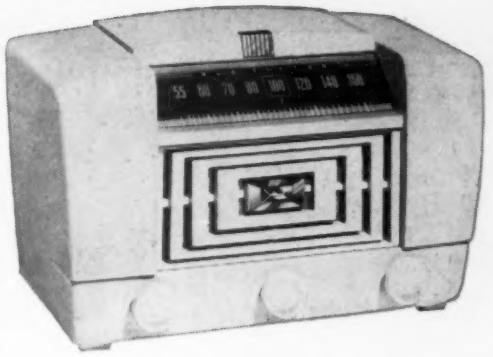

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Alcoa Sheet Metal Screws of hard 24 ST-4 alloy now are available in both type A—gimlet point, and type Z—blunt point. Lengths range from $\frac{3}{16}$" to 2" and sizes from No. 4 to No. 14.

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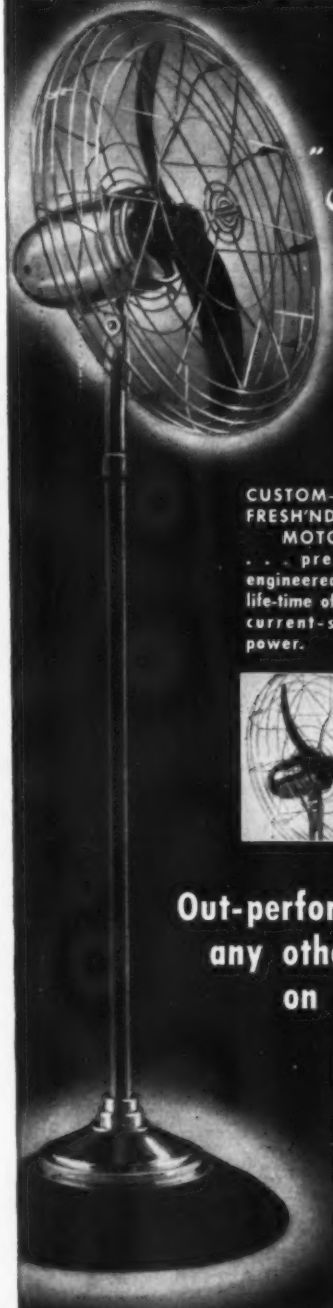

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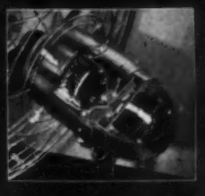

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Its noise level is so low that it's the only circulator permitted inside many radio broadcasting studios and telephone exchanges.

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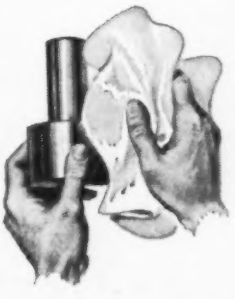

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LETTERS . . .

BOOKLETS FOR SUPPLIERS

We are contemplating putting out a booklet for the information of our suppliers. We had in mind something which would give them the location of our divisions, the types of products we buy, the services we render, how our suppliers can best cooperate with us and similar information.

I am wondering if you have any information on this subject, or perhaps you may be able to suggest the names of some firms in this country which have put out similar booklets.

H. C. Nolen, Vice-President
McKesson & Robbins, Inc.
New York 17, New York

See "Reception Room Booklets," page 115, February 1948 PURCHASING, also "Welcome Salesmen!," March 1946; "First Aid for the Visiting Salesman," November 1945, and "Public Relations Begin in the Reception Room," March 1945. Among the companies issuing such booklets are:

Geuder, Paeschke & Frey Co., Milwaukee, Wis.
Wood-Mosaic Co., Louisville, Ky.
Allen Manufacturing Co., Hartford, Conn.
Meredith Publishing Co., Des Moines, Iowa
American Optical Company, Southbridge, Mass.
American Welding & Mfg. Co., Warren, Ohio
Acushnet Process Co., New Bedford, Mass.
Bush Mfg. Co., Hartford, Conn.
Connecticut Telephone & Electric Div., Great American Industries, Meriden, Conn.
Foxboro, Company, Foxboro, Mass.
General Luminescent Corp., Chicago, Ill.
Hinde & Dauch Paper Co., Sandusky, Ohio
McBee Company, Athens, Ohio
New Departure Div., General Motors Corp., Bristol, Conn.
Raybestos Div., Raybestos-Manhattan, Inc., Bridgeport, Conn.
Stanley Works, New Britain, Conn.
Thermoid Co., Trenton, New Jersey
Wiremold Corp., Hartford, Conn.
Dennison Mfg. Co., Framingham, Mass.
Russell Mfg. Co., Middletown, Conn.
L. S. Starrett Co., Athol, Mass.

All these are designed primarily for reception room use, but could readily be adapted to a general mailing. Among the more elaborate publications of this kind is the 20-page booklet issued by the American Tobacco Co., New York. This is in the nature of a report and declaration of appreciation to all suppliers, mailed to the Company's entire list. For a description, see page 91, September 1947 PURCHASING. A letter to Richard J. Boylan, Vice President and director of Purchases, American Tobacco Co., 111 Fifth Ave., New York, might produce a copy.—Ed.

PUBLISHER HAS IT

Will you please advise if Stuart F. Heinritz's book on "Purchasing" is now available. If so, would you please be good enough to let me know where I might acquire a copy and also price.

E. A. Schlueter
Standard Oil Company of Calif.
Seattle 11, Washington

Copies of the new book, "Purchasing," 656 pages, by Stuart F. Heinritz, editor of PURCHASING Magazine, may be obtained from the publisher, Prentice-Hall, Inc., 70 Fifth Ave., New York. Price is $5.35.—Ed.

PURCHASING FOR STUDENTS OR EMPLOYEES

Has any information appeared in PURCHASING regarding systems in use by colleges or business which enable employees to secure discounts on items they may wish to purchase for individual use?

Vincent H. Whitney
Professor of Sociology
Brown University
Providence, R. I.

See "A Critical Analysis of Employee Purchasing," by Samuel W. Pillsbury, in the April 1939 issue of PURCHASING. Also see Chapter XXXIV in the textbook, "Purchasing" (Prentice-Hall, 1947). Our general observation is that the practice is declining among industrial concerns. With respect to current practice among educational institutions, you might get some additional information from Bert C. Ahrens, Executive Secretary, Educational Buyers Association, 45 Astor Place, New York. —Ed.

PRICE RISES

How much have prices risen since 1939 for men's shoes, refrigerators, steak, table radios, and wood desks?

Frank F. Casey
La Porte & Austin, Inc.
New York 17, New York

Estimated price rises since 1939 are: men's shoes, 77%; refrigerators, 42%; steak, 120%; table radios, 100%; and wood desks, 40%.—Ed.

PURCHASING ABC

Would it be possible for you to send me thirty-five copies of the "ABC of Purchasing", reprinted from the August, 1946 issue of PURCHASING? I would like the students in my class in Industrial Purchasing to have a copy.

E. O. Roberts
Associate Professor
West Virginia University
Morgantown, W. Va.

Mailed to you with our compliments. —Ed.

LIKES ADVERTISING IN OUR "MAG"

This is my first "time out" to express an opinion regarding any publication. Renewals speak for themselves. I'd no more think of discontinuing your "mag" than I'd think of discontinuing our telephone.

Please don't take up any more space on your Letters page with such letters as "Brickbat", February 1948 issue. It is obvious to the rest of us that we want the ads with the news. The ads are little salesmen whom we can receive at our leisure. They prepare us for our live salesmen who come later.

Like my missus you've improved with age. Thanks.

Chas. G. Brattan, Plant Buyer
DuPont Company
Philadelphia, Pennsylvania

WHAT IS N.A.P.A.?

In the letters page of your October issue you refer to the "N.A.P.A." What is the "N.A.P.A.?" What is the address to apply for membership of the local chapter, assuming this is available for England?

Henry A. Lester,
20 Girton Ave., Kingsbury
London, N. W. 9, England
Member, Purchasing Officers Association

"N.A.P.A." means "National Association of Purchasing Agents," which is made up of local purchasing agent associations in the United States and Canada. N.A.P.A. headquarters are at 11 Park Place, New York, N. Y. If you join a member association you automatically become a member of the national association. The national association has no membership apart from that of member associations. Most of the members association accept applications from qualified individuals in foreign countries.—Ed.

CORRECTION

In the "F.O.B." department of the March issue of PURCHASING you offer the American Management Association a suggestion for a conference session on "Increasing the Efficiency of Industrial Buying," and give the National Industrial Conference Board a pat on the back for a session on purchasing at its January meeting.

You have overlooked the fact that the subject of purchasing was ably treated at the December, 1947, A.M.A. Production Conference.

The discussion will bear repetition, however, and we may actually attempt to arrange a panel consisting of the people you have mentioned.

James O. Rice
Editor and Ass't. Secy.
American Management Association
New York 18, New York

We are glad to be set right on the American Management Association's interest in the purchasing function. It is gratifying to see such recognition of purchasing in this important association's program. There is a strong trend in modern management to divorce the purchasing function from its traditional relationship as a division of production management, and to place it on a plane coordinate with the production department, as in the case of International Harvester, Ford, General Electric and many other leading companies. This is not to say that close coordination of the two functions is not necessary, but rather that neither should be dominated by the other. In view of the fact that, on the average, 58% of product cost is represented by purchased materials and compenents, so that purchasing performance is not only a major factor but frequently greater than all other factors combined, we believe that this trend is well founded and that it will continue to gain wider acceptance in management science and practice.—Ed.

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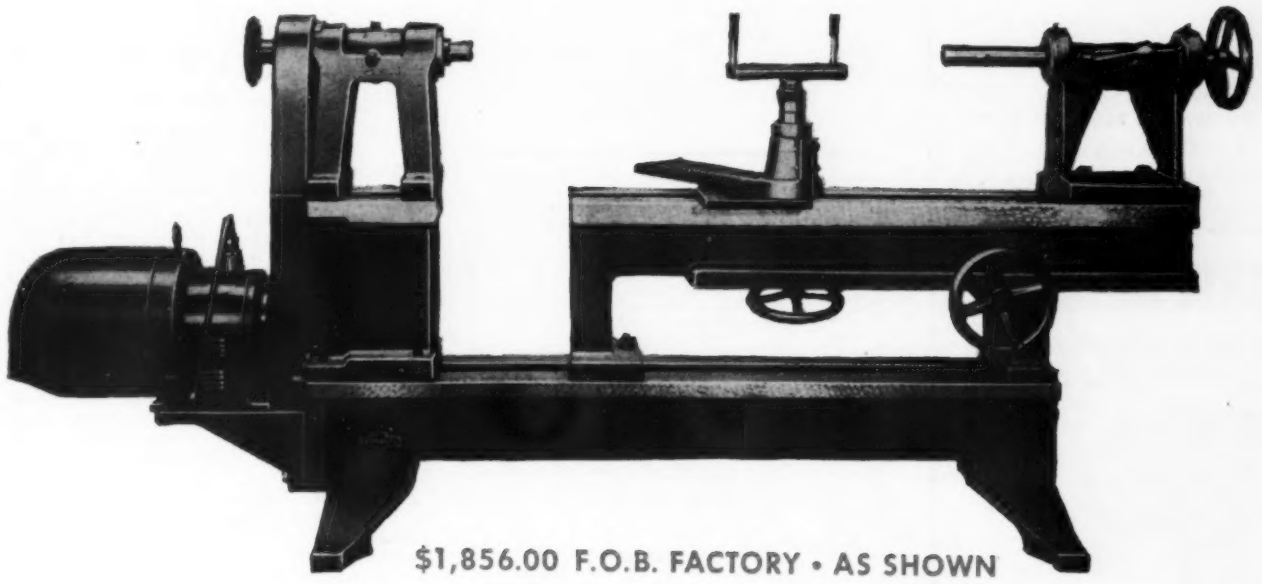
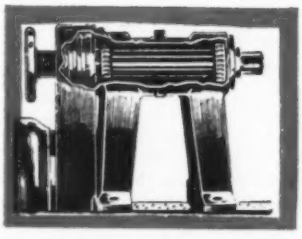
Metal Spinning LATHES

Now AVAILABLE

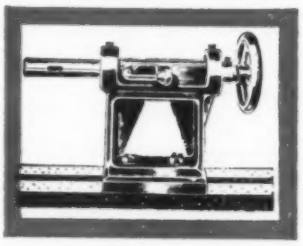
Immediate factory shipment or you may buy off show room floor of our agents from coast to coast.



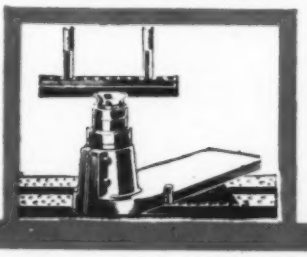
$1,856.00 F.O.B. FACTORY • AS SHOWN



These tapered roller bearings running in oil, precision adjusted to eliminate end-play, will withstand maximum continuous combination thrust load. The production proved spindle mount.



Combination screw tailstock with 4" and 9" fast travel rotary cam safety lock. 2" screw take-up can be used in combination with cam-lock in either 4" or 9" position (Pat. applied for).



Tool-rest. Two 1" spacers and 1" threaded collar on T-rest shank assure positive vertical adjustment. Interlocking serrated collars automatically lock T-rest shank in any position. T-rest cannot turn or slip. (Pat. applied for).

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Bedinger 27" lathe converted to 27"x60" Bedinger gap lathe. This converted Bedinger gap lathe is equipped with a 2 speed 5 H. P. 1800/900 R. P. M., 220 volts, 60 cycle, 3 phase, a.c. motor and 4 speed Lima drive, giving 8 spindle speeds. With the 2 speed motor a push of the button changes from low to high or high to low without stopping the spindle. This drive combination with a 1 to 1 speed ratio of the pulleys gives speeds of: High- 1730, 930, 555, and 420 R. P. M. or Low- 850, 460, 270, and 205 R. P. M. Unless requested on the order this ratio is made 1 to 1 at the factory.

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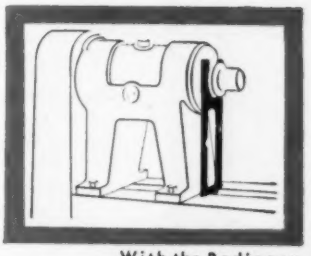

With the Bedinger spindle lock you have *both* hands free to handle the chuck. The Bedinger spindle lock is easy to slip into position and it holds the spindle in a locked position until it is removed by the operator.

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CApitol 4591

Please send me complete information as to price, specifications and delivery date on a Bedinger lathe. I am interested in a

- ☐ Super Duty Spinning Center
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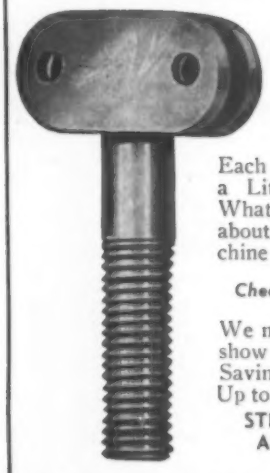

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Shorts in Catchweight Coils
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TRIPLE-PURPOSE OKONITE-ENGINEERED CABLE

• Power, as well as carrier current control and communication between this crib in Lake Okeechobee and treatment plant are supplied by an Okolite cable (shown below).

Unique power feeder also furnishes operational control and communication

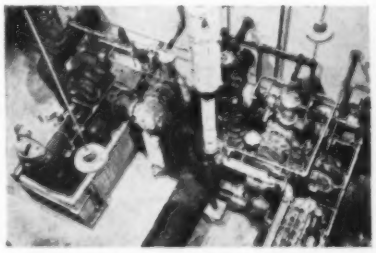
Though Lake Okeechobee in Florida provided the millions of gallons of water needed in its operations, the U. S. Sugar Corporation had to build a treatment plant to purify the water. Nearly 7 miles, however, separated the plant from the water-bound intake crib in the lake.

Power for the pumps and equipment was to be supplied by a three-conductor 5000-volt submarine cable originating at the treatment plant. It was also necessary to use remote control for operating the well-house machinery.

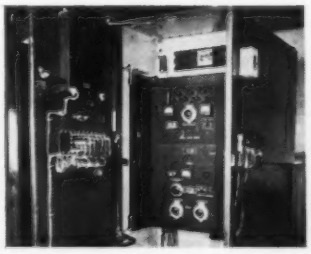
Okonite engineers were consulted and their studies showed that by proper design it was possible to combine a three-fold function in one cable. This was accomplished through the use of Okolite high-voltage insulation whose electrical characteristics permitted carrier current to be superimposed on the power conductors.

Result: An Okolite-insulated cable — armored with steel wire for the 4½-mile submarine section and with a non-metallic sheath for the 2½-mile buried section on shore — now supplies not only power and operational control but also carries a communication circuit whose talking qualities equal that of a regular telephone line.

"Unusual" cable installations have a way of turning out to be Okonite. Problem solving is our business. Why not talk over your cable problem with an Okonite engineer? The Okonite Company, Passaic, New Jersey.



• Controls for well-house equipment are operated by carrier current over same conductors that supply power to pumps.



• This carrier current phone transmits voice over 7 miles from plant to well-house over the three-phase power cable.

• End view of barge and rig ready to lay submarine section of triple-purpose Okolite power cable described above.

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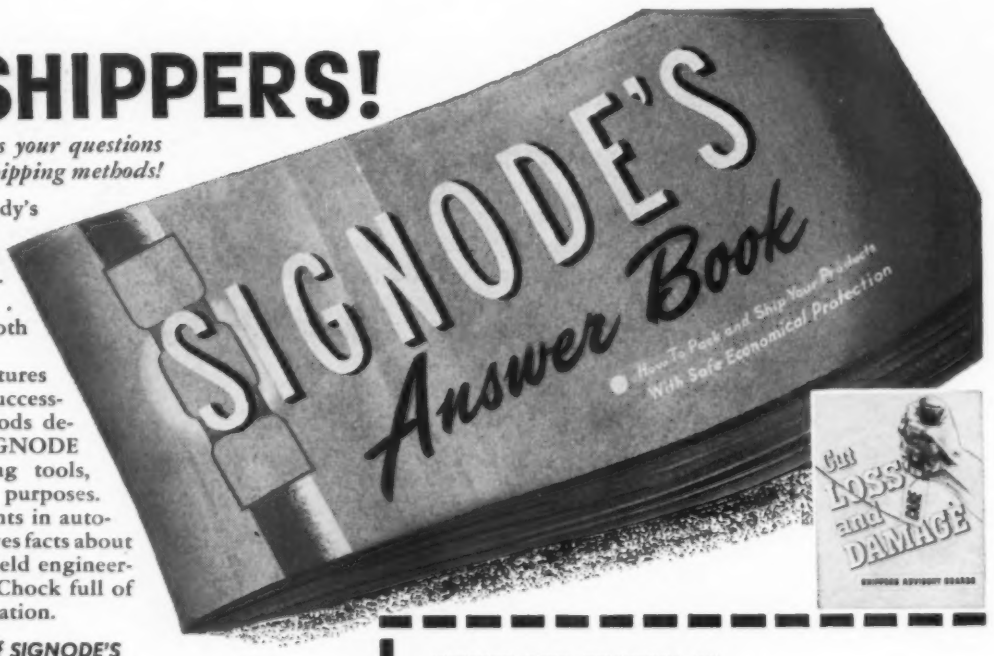

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A Bassick Grooved Wheel Caster and Bassick Position Lock (to hold portable equipment in fixed position) as used on industrial production lines.

Close-up, inverted view, of rigid caster with "V" grooved wheel.

THE BASSICK COMPANY
Division of Stewart-Warner Corporation. Canadian Division: Stewart-Warner-Alemite Corporation, Ltd., Belleville, Ontario.

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Making more kinds of Casters ... Making Casters do more

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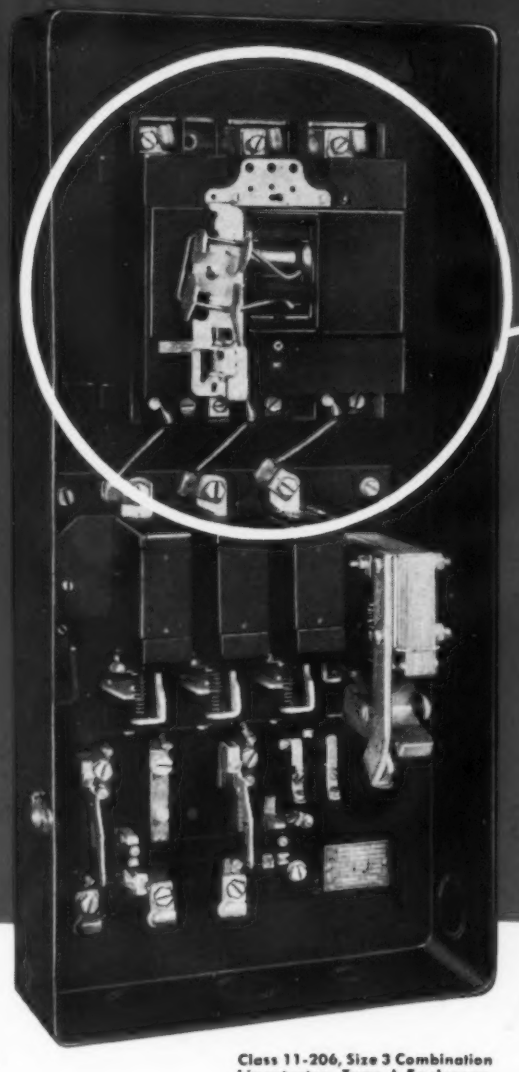
these extra advantages of AB CIRCUIT BREAKER PROTECTION in Westinghouse Class 11-206 Combination Linestarters



Class 11-206, Size 3 Combination Linestarter, Type 1 Enclosure.

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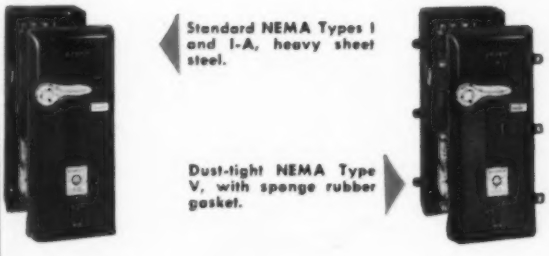

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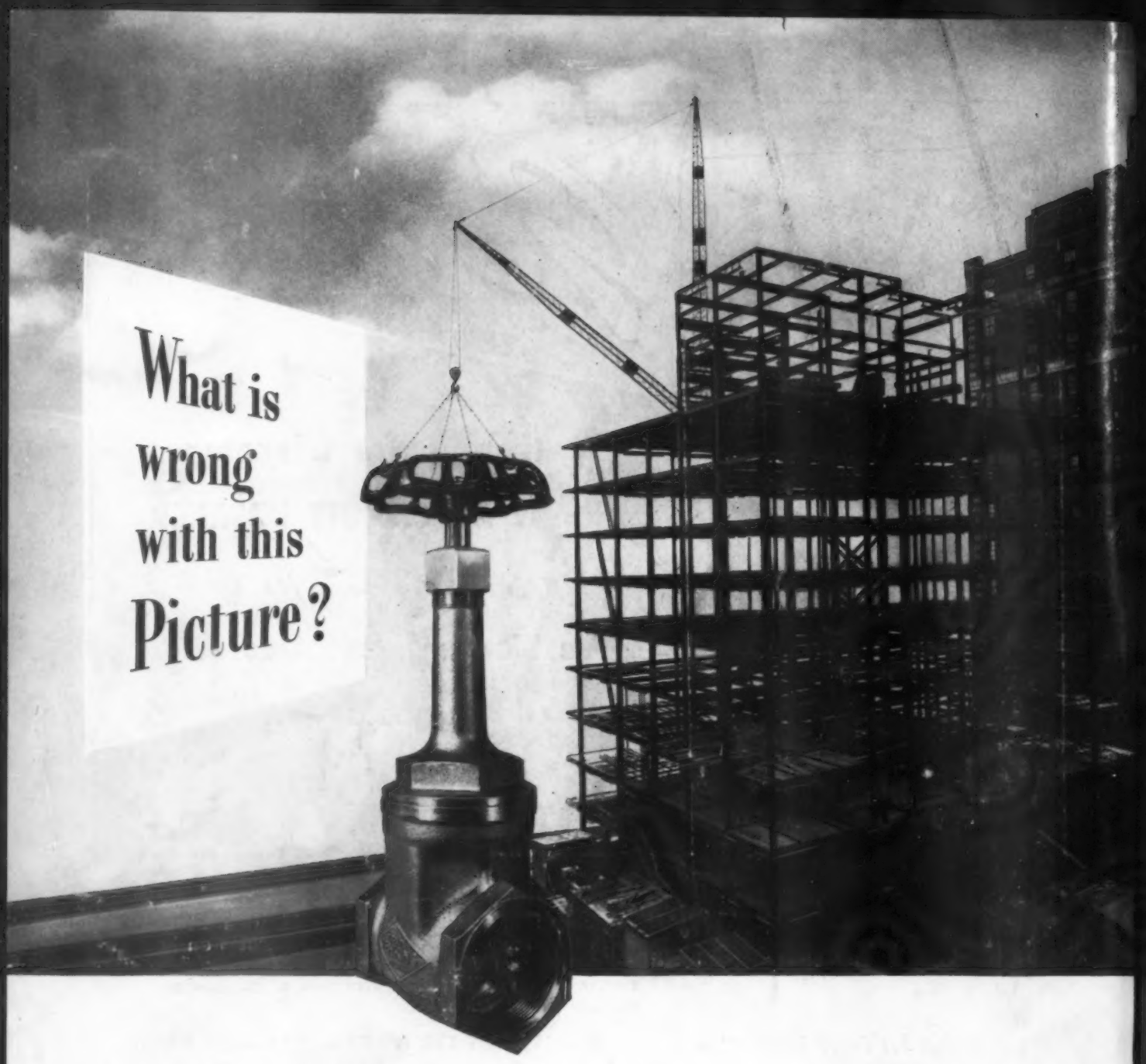

IT'S EASY to see that the size of the valve is out of proportion—but not so much if you think of *all valves* in this building as *one valve*. Collectively, valves represent an investment bigger than the cost of many large units always carefully chosen for operating economy.

That's why, today, with maintenance wages and material costs higher than ever before, alert management must keep a sharp eye on valve performance.

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